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To provide information, examples, and ideas for teachers involved in Manpower Development Training programs, this handbook discusses many important aspects of such programs; basic philosophy, basic remedial education, the learning process, individual variations, classroom environment, course outline, lesson plans, the first and second weeks of classes, progression of instruction, instructional materials and aids, and closing the project--all from the viewpoint of an integrated plan to understand and treat the trainee as an individual who should be helped to develop his full potential. Glossaries for vocational instruction and examples of evaluation and information forms are included in the appendix. Extensive references for books, materials, and films are given. (jf)

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Basic Remedial Education

Handbook For MDT Instructors

AC 003125

STATE BOARD FOR VOCATIONAL EDUCATION
NASHVILLE 37219

BASIC-REMEDIAL EDUCATION

HANDBOOK FOR MDT INSTRUCTORS

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NASHVILLE 37219

PREFACE

This handbook has been developed as the result of a need expressed by instructors in Tennessee Manpower Development Training programs, and was written as a part of the MDT instructional materials development program. As presented, the content is an attempt to satisfy the need for a guide, and to serve as a form of assistance, to Basic-Remedial Education instructors. Though Tennessee MDT curriculum materials are developed continually, until now the effort in regard to Basic-Remedial Education has been somewhat neglected to expedite the writing of occupational guides.

Experience with MDT trainees has shown evidence that occupational training alone is not enough to develop individuals sufficiently well rounded to maintain employment. Basic-Remedial Education together with guidance and counseling services have become integral parts of the design engineered to fill the multiple needs of the trainee.

This publication prepared as a guide for instructors of Basic-Remedial Education should ease new personnel through the transitional period, assist in developing course content, aid in understanding trainee background and needs, help in the selection and use of instructional materials and aids, and serve as a flexible guide for the training program. Though primarily intended for instructors this handbook also provides to administrators, guidance personnel, and occupational teachers, information to assist in understanding the Basic-Remedial Education objectives and training program.

It would be incorrect to assume that this handbook includes answers to all the problems of the Basic-Remedial Education instructor. However, an attempt has been made to cover the major areas of importance, to include practical suggestions, and to provide forms and suggested lists of materials, aids, and references. Of course, many other items could have been included both in the body of the handbook and in the appendix as well.

Recommendations, both general and specific, have been stated, but all should be interpreted with flexibility and latitude. If implemented with ingenuity, imagination, and concern for the characteristics of the local group, the activities considered suggest additional ones which should be explored freely. In this way the handbook material comes alive through contribution of useful, lasting knowledge and skills.

Also considered in depth in the handbook are the intangibles of education,–the ethical, moral, and cultural values typical of democratic living. Learning related to these should arise from realistic applications which should be incorporated into the life and training of the individual.

The handbook offers a suggested course outline, sample lesson plans, lists of instructional materials and aids, ability levels and pertinent characteristics of each, enrichment materials, suggested references for professional concern, forms, and numerous shop glossaries for correlation usage as well as to proffer background information for maximum understanding and successful teaching of the trainee. The handbook covers all levels of Basic Remedial Education, grades 0-9, plus the developmental stage of self-understanding and progress–all a vital part of the total training program.

This handbook, published with MDTA funds, may be obtained by written request to Mrs. Frances S. McDonough, Supervisor of Curriculum Development, MDTA, 598 James Robertson Parkway, Nashville, Tennessee 37219. Any reproduction of this handbook content shall be credited to Tennessee Manpower Development Training.

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Information and materials for this Basic-Remedial Education Handbook have been submitted by teacher educators, Basic-Remedial instructors, guidance counselors, supervisors, and other interested MDT personnel. Mrs. Frances S. McDonough, Tennessee MDT Supervisor of Curriculum Development, organized, compiled, and wrote this publication.

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A preliminary review of the completed Handbook was made by many of the group already listed as well as by the following individuals from the Harriman MDT School:

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The effective non-technical illustrations and chapter headings were drawn by the professional cartoonist and illustrator, Mr. Bill Dyer, of the Knoxville News Sentinel staff. These sketches emphasize thoughts of special importance in a manner planned to fix the ideas in the mind of the reader and pique interest.

Sincere appreciation is expressed to all who contributed to the preparation and review of this handbook.

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INTRODUCTION

During the years 1917-1967, the American population doubled. In the last twenty years of this period, the population increased nearly fifty million, with growth and other changes occurring and continuing at an accelerated pace each year. Economic variations emanated from a complex economy in which grew new occupations and industries unheard of a few years earlier. Due to lack of occupational skills and technical knowledge workers were displaced and unable to qualify for reemployment in the sophisticated industrial age of the present day.

Other fundamental changes occurred in the lives of the American people. Due to the invention of the automobile and other means of transportation the population became mobile to an extent never before known to man. The resulting rootlessness gave rise to a change in outlook with associated instability of thought, and a general weakening of the moral fiber with increased laxity in both moral and ethical standards. This period was characterized by a loss of close family ties, breakdown of parental authority, loss of respect for law, and untold freedom for young people in particular. These factors must share some responsibility for a large percentage of school dropouts.

In addition to the socio-economic factors mentioned, automation brought about other changes in the American way of life. No longer were a strong back and a willingness to work prerequisites for getting a job. Training and technical know-how became so all-important that thousands were unemployed and/or unable to obtain work to sustain themselves and their families. As welfare rolls grew in length the need for training and/or retraining adults for entry level employment became obvious.

The advent of Russia's sputnik developed further a national concern for rapidly increasing manpower needs. To stabilize the situation and to utilize the backlog of available but unemployable people Congress in 1962 passed the Manpower Development Training Act. The Act has as its prime purpose making a national effort to identify, train, and bring unemployed and underemployed individuals into the educational, cultural, and economic stream of life. More specifically the Act involves training and/or retraining of individuals for entry level employment in a wide variety of occupations.

Early in the planning stages of the training program, which in essence is an economic program, it became evident that more was needed than occupational skills. Many individuals could not attain or hold jobs because of deficiencies in reading, writing, language skills, and mathematics. Many of the unemployed were functional illiterates. In fact, the 1959 census showed 7,800,000 adults 25 years of age or older as functional illiterates. Of these, 2,109,000 had little or no schooling whatsoever!

In an effort to correct this inadequacy, one-fourth of the MDTA training day was assigned for Basic-Remedial Education. Currently in some situations this time allotment is being increased further as individual needs indicate.

This book has been written in an effort to provide needed information to aid the Basic-Remedial Education teacher to adjust easily to the MDT instructional goals and program.

CHAPTER I

AN OVERVIEW

To understand MDT Basic-Remedial Education programs the instructor needs to survey, examine, and understand the philosophy underlying them. Of equal importance is insight into other facets of MDT to increase the capacity to realize and interpret the relationship of its various components.

The following discussion in this chapter is an effort to help the instructor establish a workable base of understanding for the development of an effective classroom program.

PHILOSOPHY

The purpose of both the Manpower Development Training Act and other Vocational Education programs is to help people make adequate vocational adjustments and to facilitate the smooth functioning of the economy through the effective use of manpower. The overall philosophy implies that each individual has certain capabilities, interests, and characteristics, which, if recognized and developed, make him self-sustaining, and a happier, more useful citizen.

Because MDTA Basic-Remedial training is a fundamental, valued, and integral factor in developing entry-level occupational competency, the comprehensive philosophy for both is basically the same. However, Basic-Remedial training perhaps may be said to meet a deeper and even more personal need. This is true since it affects trainee ability to function effectively in society, for failure to perform reasonably well in mathematics, reading, writing, spelling, and oral communication usually provokes a sense of failure and a feeling of personal inadequacy. Therefore, the primary philosophy of Basic-Remedial Education is to provide the necessary supportive instruction needed to advance under-educated or under-achieving trainees to a satisfactory performance level.

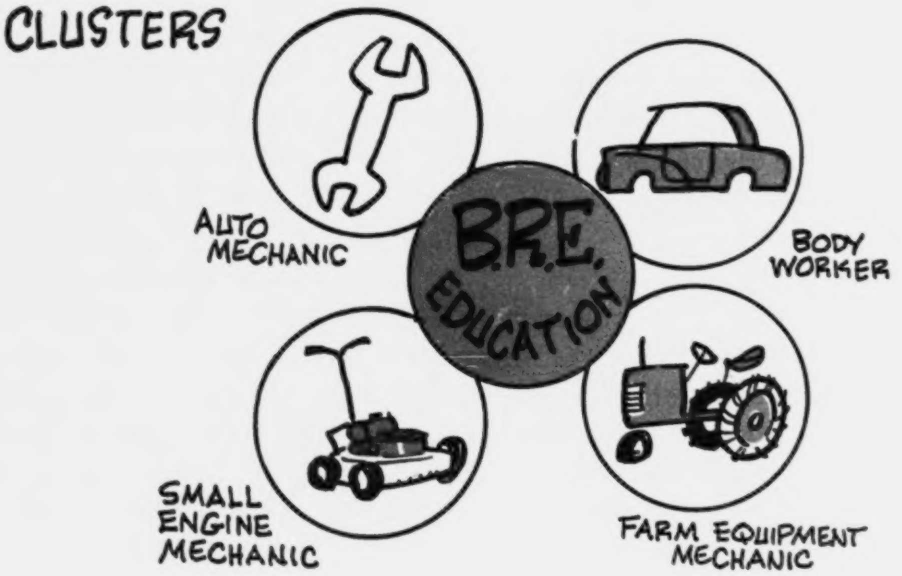
Basic-Remedial Education must be strongly oriented to the future of the trainee. That is, a close relationship should exist between the Basic-Remedial Education and occupational instructors, and the Guidance personnel. By the same token, shop materials and information should be an integral part of Basic-Remedial Education instruction. The result of this cooperative effort is a directly related educational mix.

To provide this related and balanced educational blend, the math and communications instructors should adopt the team approach by working closely with the occupational instructor. Supervisors should encourage this excellent means of revealing the skills and knowledge needed by trainees. Truly nothing is more outdated, unrealistic, and impractical than the idea that reading is reading, math is math, electronics is electronics, and neither is related to the other. The Basic-Remedial instructor whose background generally is academic rather than vocational

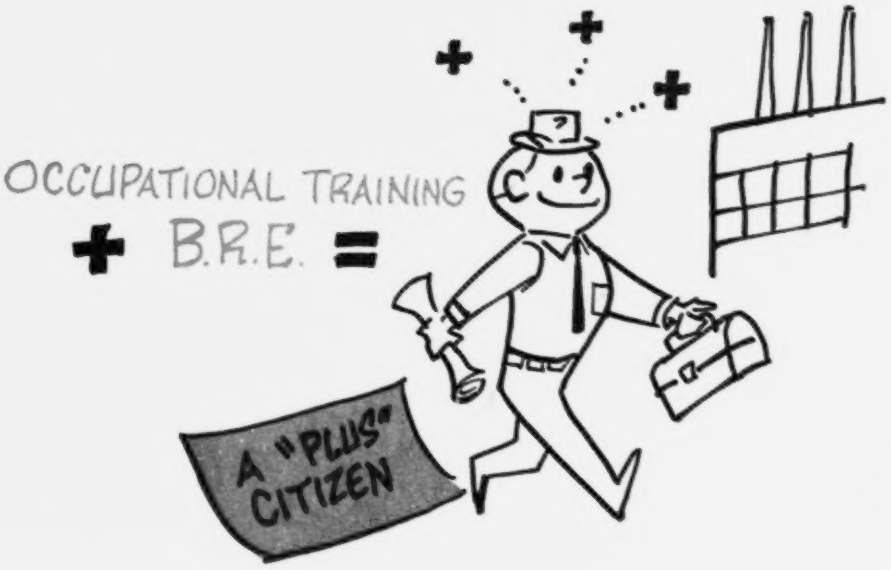
TEAM APPROACH

may find this thought difficult to assimilate, but once digested he finds instruction easier and trainees more ready to accept it. Instruction broadly oriented to the occupational training program is simply easier and more enjoyable. The same may be said in reverse, for each complements and supports the other to achieve occupational competency in sufficient measure for entry employment. This philosophy is a foundation stone in MDTA training programs.

Considerable thought at present is being given to clusters or groups of occupations. In a training facility where occupations are grouped together, in the early instructional days or weeks the Basic-Remedial materials can be oriented to the cluster as easily as to a single occupation. For example in a cluster one might group automobile mechanics, service station mechanics, farm machinery repair, and small gas engine mechanics. For all of these the math and communications instruction could be the same, have similar applications, and be as appropriate to the cluster as to a single occupation. Acceptance of such innovations, adjustment to them, and mental flexibility are imperative in the developing philosophy of MDTA instructors.



Another thought should be injected at this point in regard to the plus factors in Basic-Remedial Education. Though occupational competency is the ultimate goal of the program more is involved than occupational and Basic-Remedial Education instruction. Plus factors include getting along with people, coming alive with interest and activity in community life, becoming a better citizen, developing aspirations and budding leadership abilities, and increasing an understanding of the problems found in the world. These elements call for the total involvement of every instructor. In some of these instances the Basic-Remedial Education instructor is even more concerned than the others. Thus in his thinking and planning he should develop an awareness of the human equation implied.



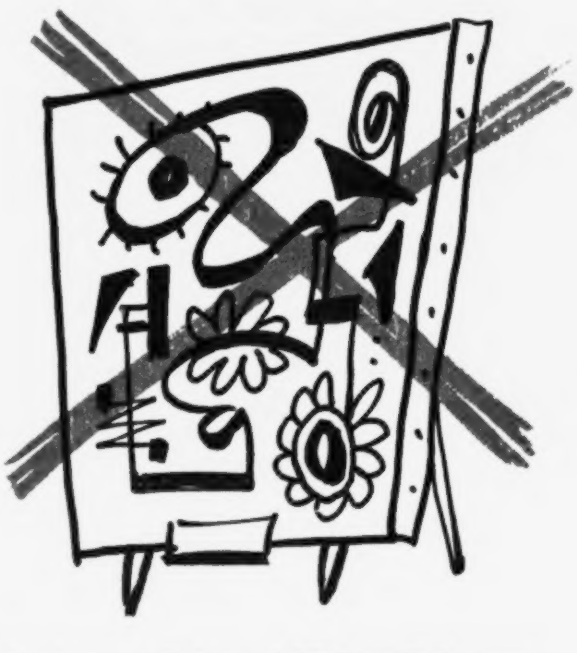
Of necessity the Basic-Remedial Education instructor entering the MDTA program will pass through a transitional period. It is assumed that he would be academically competent, but he immediately must orient his thinking, planning, and procedures to the everyday world and to work in particular. Of necessity thinking must be redirected to consider trainee needs and requirements. The framework of planning must be constructed to adapt instruction not only to occupations but also to social and economic needs and development. Instructional procedures must be projected along these lines, and still more important, arranged to enhance desirable attitudes and minimize undesirable attitudes in the trainees.

DETOUR
TO TRAINEE

INSTRUCTION & THINKING RE-DIRECTED

Another facet of the transitional period has to do with accepting the need for individualized instruction or teaching by levels within each class. Normally trainees in a Basic-Remedial Education class have been found to be on three or more levels of achievement. In other words a few may be functional illiterates, a few may be on the fourth or fifth grade level, and a few may be on the ninth grade level or above. Generally the experience of the instructor has involved teaching on one level rather than several and as a result he will need to condition his thinking and instruction to adjust to the mosaic of backgrounds presented him.

The philosophy of MDTA Basic-Remedial instruction encompasses a change of attitudes, gearing materials and methods into a usable, applicable form, and doing something for the trainees themselves, individuals for whom little has been done in the past. The trainee must be exposed to a new way of life in a manner to encourage him to want to enter into productive employment.



AVOID THE ABSTRACT

Instructors should use anything directly related to student needs, and avoid abstract ideas, theories, or instruction having little purpose in the overall educational and future plans of the trainees. So a time and content sequence oriented to the learners' earlier experiences should be utilized to develop achievement expectations.

A philosophy should be developed by Basic-Remedial Education as well as occupational instructors to include some competency in management and in relationships. To be more specific, management includes skill in the control of time, money and effort; in the understanding of laws and regulations governing consumer control; in the legal and practical aspects of good citizenship; and in the use, applications, and conservation of natural resources. Concepts involving relationship include the interrelationships among people in the home, in school, and on the job as well as leadership in community activities. Both management and relationship are involved in establishing a business or a home and of course nearly all trainees will do one or both.

Though it may seem that the preceding discussion of the philosophy of Basic-Remedial training is too broad, it should be emphasized at this point that the concepts discussed are fundamental to MDTA programs and specifically are fundamental to training through Basic-Remedial Education.

BASIC-REMEDIAL EDUCATION—What is it? How does it work?

BASIC
BUILDS
REMEDIAL
REINFORCES
EDUCATION
EXPANDS

Basic-Remedial Education may be defined as an area of instruction usually rather elementary, encompassing the general fields of reading, writing, language skills, and mathematics, offered to enable the trainee to pursue a program of entry-level occupational competency. Specifically Basic-Remedial programs assist the trainee to achieve proficiency in the fundamental skills which help him to function successfully in, and contribute to, the society in which he lives.

A successful MDTA Basic-Remedial training program is one which begins with existing skills and takes the individual at least as far as the trainee is capable of advancing toward the level required by the occupational portion of the project. Trainees require educational provisions based on their needs, interests, abilities, and disabilities.

In addition to mathematics and language arts each trainee studies specific areas of knowledge namely practical arts, science, and social relationships. These areas not only provide for technical, mechanical, and related skills but also include and emphasize comprehension and application in real life situations.

Basic-Remedial Education generally is considered as instruction in mathematics and communications with remedial training provided for all levels. Remedial also connotes correction of faults and deficiencies in usage or mechanics of speech and reading. Hence the name Basic-Remedial Education has come into frequent use to describe this type of instruction.

Generally three levels form a practical grouping of trainees—namely, beginning, intermediate, and advanced. As a rule a large number of students will qualify for the beginning group. This does not necessarily imply that all of these are non-readers (illiterates) but does indicate that in a given class group those with the fewest skills are so classified. In some cases the beginning level might represent the equivalent of 0 - 2 grade levels but in another could represent 0 - 4 grade levels. This sometimes is termed the frustration level due to the inability to comprehend.

The next higher level—Intermediate—is designed primarily for those with an average grade equivalent of 4 - 6, but in some class groups may reach a somewhat broader or higher level. Few of this group will be functional illiterates though this is not always true. This stage is concerned with extending and refining skills learned earlier.

The Advanced level is planned for those who need additional and/or remedial training, and usually is equivalent to grade levels 7 and above. In this group problems and difficulties should be corrected to provide increased educational and social skills and information in the areas considered. The trainee should be prepared for the developmental stage in which he begins to take pleasure in progressive improvement and ability to make applications in regard to his vocational and social responsibilities. Few trainees, young or old, attain the upper limits of their capabilities. For this reason Basic-Remedial classes provide knowledge and skills for a continuing program of self-education and advancement throughout life.

GOALS

It is a generally accepted fact that education is a continuous process, not a facet of life confined to a shop or classroom. Thus trainees need to develop into self-directing learners if they are to perform effectively in society. Nearly all learning is personal–implying that the individual advances through self-planned study opportunities. Hopefully all MDT instruction encourages self-learning throughout life. Thus an overall goal of total education may be stated as helping the individual to help himself.

This total objective is also a primary aim of the MDTA program and permeates all phases of it. Keeping this in mind, at this point it is useful to state the general goals of the Basic-Remedial Education portion of MDT projects.

LEAD TRAINEE TOWARD GOAL

General Objectives:

1. To develop the ability to adjust to real life situations through Basic-Remedial Education.
2. To develop understanding of the need for Basic-Remedial Education as a fundamental basis for occupational entry and advancement.
3. To develop understanding of the correlation between Basic-Remedial Education, occupational instruction and the guidance program.
4. To develop understanding of the social and economic advantages which accrue from proficiency in Basic-Remedial Education.

These general objectives or goals can be stated in a somewhat different manner. All imply giving another chance to the individual who is underdeveloped educationally, economically, and culturally. Through training, another opportunity is offered to begin or further education in a program especially designed to provide a pool of employable workers.

In achieving this objective another sub-goal appears, namely to orient learning to the world of work. In so doing, it is imperative to provide understanding of the rights and privileges accorded the worker both on the job and as a citizen.

In citizenship training it is wise to provide the individual with opportunities to learn the fundamentals of health and social sciences so he may understand and join in the life of his community, state, and nation.

Progression along these lines normally leads into planning to enable the individual to develop the fundamental skills of communication, listening, speaking, reading, writing, as well as the basic skills in numbers. It is mandatory to acquire knowledge and develop skills in these areas at least up to the level required by the occupation in which the individual is being trained.

Attention should be given to developing and improving the self-image. To accomplish this purpose it is necessary to develop self-confidence in the individual's ability to learn by providing successful classroom experiences. As a result of these it is possible to develop improved attitudes as a means of re-orienting the trainee to the world about him.

Learning experiences should be kept functional and applicable to the job and to everyday life. Thus the trainee is provided with continued orientation to their use and meaningfulness. However, in view of the time limits set for training it is necessary to program for maximum development in a minimum of time. Ideally all fundamentals could be taught all trainees. Practically, though, this usually is not possible. So the Basic-Remedial Education instructor should attempt to provide each trainee with at least enough experience to hold the job for which he is being trained. Essentially the total goal is to accept the trainee on the level at which he enters the program and to raise him to a level of functional literacy in as short a time as possible.

Let us consider objectives (goals) in more detail. What is an objective? An objective is a definite goal of attainment. In other words it is a goal which can be accomplished or reached. One of the four or five major objectives of each MDT project is "To develop understanding of the need for the ability to function effectively through the study of Basic-Remedial Education." Implied is that "understanding the need" aids in receptivity to acquisition of skills. This is an important general objective for each trainee to reach if he is to become employable. The instructor should inform the trainees about program goals which he may state as the purpose of the program, or the reason for the course. Objectives are written in terms of the trainee and state the desired development of a knowledge, skill, understanding, or appreciation.

Objectives may be general or specific. General objectives state the broad goals of the total program. Specific objectives often called aims, are more definite and refer to smaller accomplishments for achievement in a shorter unit of study.

In stating objectives the instructor should remember these points. If the objective refers to:

(1) skills, it is stated thus: To develop the ability to ....

(2) knowledge, it is stated thus: To develop an understanding of....

(3) attitudes, it is stated thus: To develop an appreciation of (or acquaintanceship with)....

State all objectives in terms of trainee development.

SKILL
KNOWLEDGE
ATTITUDE

GET THE COMPLETE SET

INSTRUCTOR PREPARATION

Survey of Basic-Remedial Education instructors shows that nearly all have good academic background. In vocational training programs, however, this in itself does not always provide enough preparation for teaching culturally and educationally deprived individuals. Understanding the trainees is of prime importance. These people are a special group composed of individuals with special needs and characteristics which the new Basic-Remedial Education instructor must understand if the trainee is to be prepared to live in the world of today. The following discussion of trainee characteristics and needs is included in an effort to promote better understanding.

TRAINEE CHARACTERISTICS

The trainee looks upon the MDT program as a second chance. As a result he may be more strongly

B.R.E.
SECOND CHANCE
OPPORTUNITY

motivated to accept training than he was at an earlier stage in life. The instructor should approach the trainee with a positive viewpoint in an effort to upgrade and assist him in every way possible. Also he should recognize that the trainee varies in type and quality of background according to the kind of training program, the locale, and whether the situation is urban or rural.

The characteristics herein discussed will not apply necessarily to all trainees. This is not to say that the characteristics listed are the exception, but neither do all apply to every enrollee. In other words MDT trainees represent a fair cross section of the unemployed and underemployed people across the state.

Some trainees will be observed as creative, talented, and highly motivated. A few may be very intelligent while the majority will prove to be of average intellect.

MDT trainees, however, require help to be successful in the world of work. Some are dropouts; some have a reasonable education but many have such poor attitudes that they can neither get nor hold a job; some have known nothing but failure all their lives; some have been in penal and/or mental institutions; and nearly all are unemployed or underemployed. Though some individuals may have completed as much as the 9th or 10th grade of school many will inventory as functional illiterates. Too, each trainee is in need of financial assistance to support himself and his family during the training period. (The exceptional trainee is discussed in Chapter II.)

Most people wish to be treated with respect–respect for their abilities, their interests, and their dreams. MDT trainees are no exception. They feel a deep need for acceptance because most have been rejected by family, by former instructors, and by society as a whole. Many, because they failed early in life, have continued failing and being rejected until they dropped out of school completely disheartened and disinclined to try again. Such repeated failures caused formal schooling to become a punishment rather than an opportunity to learn.

Repeated defeats contributed largely to attitudinal changes characteristic of the group. Repetitive failures caused these individuals to become inhibited, frustrated or hostile, and withdrawn. At times they even may exhibit violent tendencies which manifest the helplessness they feel against the society in which they live.

On the other hand completion of an MDT program does not insure success. In fact the trainee may need to make several attempts at employment before the result is satisfactory.

Many trainees show an inability to communicate. As a result they feel that no one listens to their needs and desires so they become belligerent and remote.

Many trainees have health impairments and needs which require attention before they can absorb fully the training program presented them. Some have hearing and/or eye defects, some have dental problems, while still others have psychological, mental, and physical handicaps or chronic illnesses which are debilitating. (Refer to Chapter II, The Exceptional Trainee) Correction of as many of the physical problems as possible assists the trainee to remain in classes, to give better attention to subject matter presented, and to participate more actively in the learning process.

The instructor should recall that slower reactions and a steady decline in ability to see, hear, and move begin approximately at age fourteen. Thus some older trainees may be slowed in the assimilation of subject matter. This is not intended to imply that older students will fail in the training program but the instructor should be aware of the slower pace at which such individuals may work and advance. Exceptions prove the rule, of course. Often the older trainee sets higher standards for himself, will have stronger motivation and goals, and because of need and past experience will be more determined to succeed. These factors generally equalize progress with the younger trainees and in some cases enable the older individuals to surpass them in achievement.

Better Late
—than Never!
B.R.E.
TRAINING
CENTER

The instructor should realize that trainees of all ages can be remarkably perceptive. They resent "busy" work, and any presentation for which they do not understand the need.

Adult trainees dislike and may ignore materials not applicable to their age group, occupational interest, and lives. Thus the instructor should consider these factors in daily class presentations, explaining the reason for the work and orienting it to occupational training as fully as possible.

Many trainees exhibit a short attention span, some drift off into day-dreaming periods, while others seem not at all of this world. Such withdrawals should be anticipated and circumvented with brief breaks in routine, alternating periods of study and activity involving trainee participation.

Some trainees prove to be eager and intelligent; some will be eager but of lower intelligence; some will be curious; some will be indifferent. Others carry a "chip on the shoulder" and have the attitude "teach me if you dare or can." All have different reasons for entering training but only a few will be able to state their goals or even be aware of having the need for any.

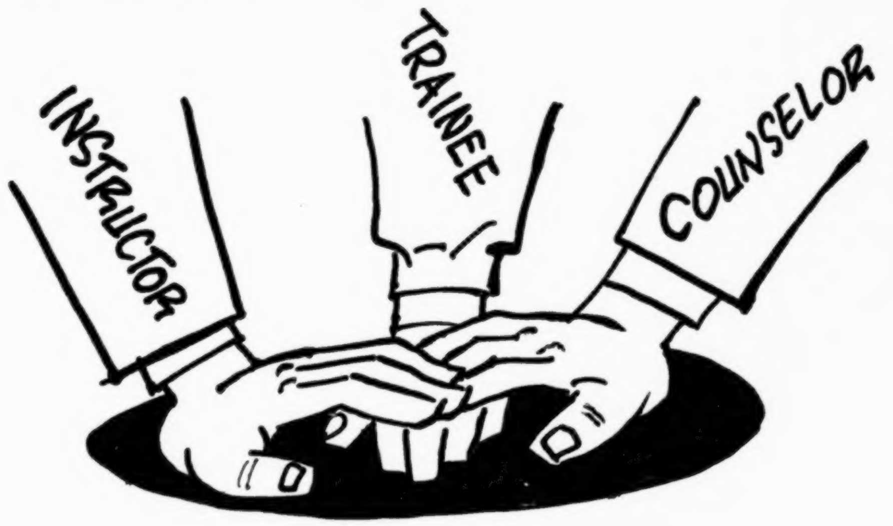
By way of review, be reminded that the trainee is a human being with his own hopes and dreams for the future. He may be bright, dull, eager, unwilling, cooperative or perverse, calm or volatile, receptive or unresponsive to friendly overtures, eager for approval or apparently indifferent to it. In truth he is a complex individual with many facets upon which the instructor must build to develop an employable person.

Understanding the trainee and accepting him as he is are basic to helping him learn and develop. Beyond adequate academic background this is the first step in preparing instructors for MDT teaching. Without responsiveness, sensitivity to, and full appreciation of trainee aspirations, problems, and background, little can be accomplished and much harm can be done.

The second step involves reorienting the thinking of the Basic-Remedial instructor to vocational programs. He should be convinced there is a need for training people with special needs and problems, and must be willing to involve social, economic, and occupational training in the math and communications classes to a considerable degree. Frequently, this compels a readjustment of habits, plans, philosophy, and general overall instructional approach.

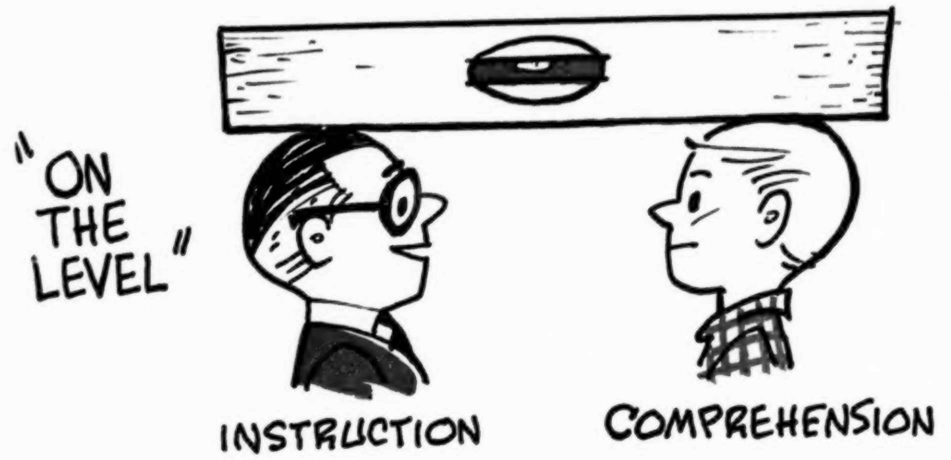
INTER-RELATIONSHIPS – TEACHER-TRAINEE

The instructor who can take these two steps outlined is then ready to take the third, understanding the teacher-trainee relationship.



First of all the instructor should love people,–all people. He should feel that every one is born with certain gifts or talents which if developed can provide a full, satisfying life to that individual. He must realize that every person has some worth which with patience and understanding can be found and increased.

Patience is a necessity. It involves encouraging the trainee to come for help, willingness to listen to problems, and desire to promote gradual growth and improvement of trainee attitudes, knowledge, skills, and goals. It precludes judging trainees before they have the opportunity to accept the chance being offered them. Patience embraces communicating with these disadvantaged and deprived individuals. In this sense it may require learning to speak the language of the trainee in an effort to get him involved in classroom activities. It is imperative that the instructor put himself on the level of the trainee in speech and interests to catch his attention and to show his understanding of him as an individual and of his personal situation. Some studies show that occupational instructors with less college background are able to instruct on the trainee's level more easily than individuals with one or more college degrees. Nevertheless, it is important for all instructors to make a strong effort to teach on the plane of the trainee for interest and for optimum understanding. This is one more means of encouraging the enrollee to stay in the program to its conclusion. Use all devices to help the student want to remain to the end of the training period.



The instructor needs self-confidence to deal with and solve problems of the varied nature presented both in and out of the class. Here good judgment and reliance on past experiences prove valuable.

Obviously some occupational experience and competency provide the Basic-Remedial Education teacher with additional background and understanding of human relations, the overall economic picture, and job training requirements. To spell out this thought in more detail, he needs work experience in addition to teaching if he is to do the job expected of him. Thus, it is obvious that a psychological rather than a logical, academic approach is required to understand the trainees and gain their cooperation. Previous occupational experience enables the Basic-Remedial instructor to be more free from preconceived ideas and social conditioning in regard to the trainees. The result is a more relaxed interrelationship between them.

Treat the trainee with respect, consideration, and with finesse. Assist him in association with his peers by the use of gentle, pleasant, and humorous comments, preferably bringing in occupational experiences with Basic-Remedial overtones.

Often a trainee enters the program resentful of authority, any authority, (parents, teachers, police). Such resentment stems from not being aware of what makes him an acceptable individual, and so he feels totally inadequate. Such a limitation hampers progress.

Because a trainee has been accustomed to and anticipates failure as a way of life, it is important that the Basic-Remedial instructor arrange for him to achieve some small success at the earliest possible moment. The adage that nothing succeeds like success surely is true of the MDT trainee.

The teacher should avoid presenting himself as a discipline symbol. This is not to indicate that permissiveness should be the rule, but rather that the instructor should lead the trainee gently and firmly along the path of progress. Most deprived individuals lack the security which comes from discipline and react well to it properly used. However, the instructor must remember that he has no right to use discipline to push trainees out of the program.

To establish teacher-trainee rapport it is wise to place classroom emphasis on the student side of the desk. Make him feel that what he says is worthy of attention. Accept him as a reasoning and reasonable individual. Give humor and laughter a place in your relationship, frequently laughing at yourself as a means of helping the student to do the same. Be flexible, be approachable, and identify with your trainees. Above all avoid prejudging them on the basis of tests, past record, personal appearance, or the opinion of others. Take time to know and inventory their capabilities and attitudes before judging, and then be generous in evaluations. This is the recipe for teacher-trainee rapport.

INTER-RELATIONSHIPS – AMONG FACULTY PERSONNEL AND SUPERVISION

Instructors can benefit greatly from the experience, background, and teaching approach of other teachers in the training facility. Reference here is to frequent interchange of ideas and information among Basic-Remedial instructors, and between the Basic-Remedial and occupational teachers. Neither should isolate himself from those in the other groups. Visits to the shops offer opportunity for the Basic-Remedial teacher to gain information for related instruction and to be aware of some of the problems which face the trainee in his chosen occupational field. Another benefit accrues from the rapport or empathy which is a natural outgrowth of these personal contacts.

It goes without saying that every instructor should cooperate in every way possible with the local administrative and state supervisory personnel. Supervision is provided to assist the instructor, not to add to his responsibilities. Thus, the teacher should feel free at any time to call on either group for any assistance he may require.

In addition to a close working relationship with other instructors the Basic-Remedial teacher may derive much benefit from understanding the services provided by guidance personnel. Their prime objective also is to help the trainee to develop into a well rounded individual. In short, guidance, like Basic-

Remedial instruction, plays a supportive role in this effort, assisting trainees, instructors, and administration in many ways.

What specific aid may the Basic-Remedial teacher rightfully expect from the guidance department? Here may be found trainee cumulative records—medical, attendance, personal data, work history, interviews (non-confidential), schedules, progress and safety tests, and evaluation of tests given. These are available to instructors to provide knowledge of the trainee and insight into his background.

Though counselors offer several types of services other than record-keeping, individual counseling is the core of their program. The Basic-Remedial Education instructor may refer any trainee to the counsellor for the purpose of working out classroom antagonisms and frustrations as well as for discussion of personal problems when the need arises.

From the intake interview on through emergency, personal, vocational, educational, and social counseling to the exit or terminal interview, the counselor gains a vast amount of information about the trainee. Thus he can be of considerable assistance to the instructor in trainee appraisal.

Initial testing or trainee evaluation usually is part of guidance services. Though more than formal testing should be included in the initial and progressive inventory of the trainee, test results do offer some useful information. The counselor is available to interpret and evaluate the tests upon request.

It should be pointed out that the counselor and the Basic-Remedial instructor need to develop the meaningful intercommunication so essential to the successful program. Each should be willing to take the other into his confidence.

The counselor provides consultative and/or resource services for instructional areas involving human relations. The Basic-Remedial Education instructor may utilize the counselor to aid in programs or units for which the counselor has special training. Topics such as meeting the public, the job interview, and the job application serve as examples. Also the counselor may assist in finding job-oriented materials for some instructional units, help secure resource people as speakers, guests, or panel members, or arrange for field trips.

The Basic-Remedial Education instructor-counselor: relationship should prove mutually advantageous.

SUMMARY

In this introductory chapter effort has been exerted to provide background for understanding of the total MDTA philosophy and goals with specific application to Basic-Remedial Education. Further discussion was included to orient the Basic-Remedial Education instructor for better understanding of the attitudes, characteristics, needs, and problems affecting trainees. Interrelationships among project staff personnel also were pointed out as a means of working together for mutual advantage.

With the background established, the next chapter will consider the learning process and related topics.

CHAPTER II

THE LEARNING PROCESS

In the broadest interpretation, learning means a change in the way of acting, or behavior modified through experience. Early learning may occur through feel or the trial and error process. Basically the two types of learning are: (1) motor perceptual and (2) conceptual.

Motor perceptual learning implies that some animals and most people learn through motor perception (motion, physical sensation, or feel, interpreted in the light of experience). Animals and people who change their behavior as the result of experience are said to learn by this method.

Human beings also learn through the conceptual learning process, though animals do not. Both people and animals can learn how to do something but only people demonstrate the ability to learn that something is true. This conceptual learning of the best type is restricted to man alone.

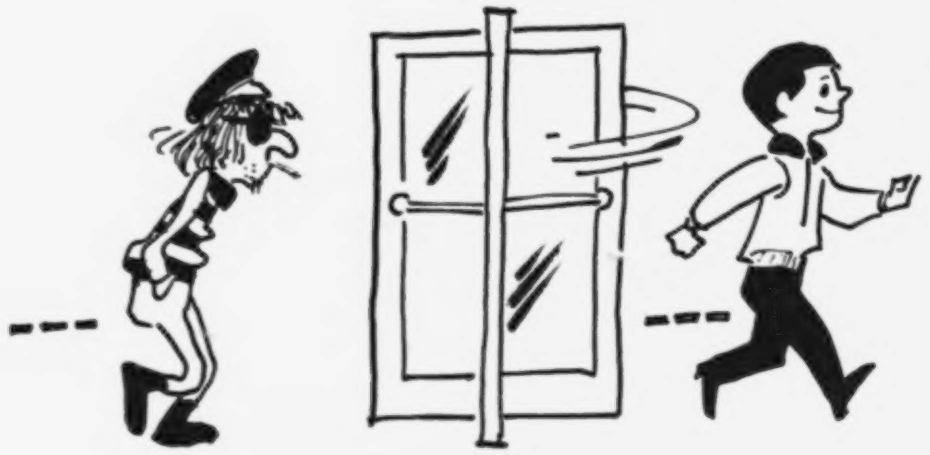
Much learning is through the trial and error process which most often is used in motor perceptual learning. However, man can transmit that which he has learned is true through speech and writing. The plus value of human learning is knowledge which can be accumulated and passed on to others.

The two reasons for learning are necessity and curiosity which accompany wondering, doubting, and questioning to lead to the process called thinking.

Often we hear that experience is the best teacher, and certainly experience is a factor in the learning process. If past experience fails to provide the solution to a new problem, reasoning and thinking occur to produce a logical answer. On the other hand Webster says that learning is knowledge or skill acquired by instruction or study. In this definition the instructor and trainee are involved jointly in promoting the learning process.

Probably the most important element of learning is motivation, or that desire or will, which causes one to drive toward a goal. It is that element which makes a trainee want to learn. Motivation generally is termed incentive if an external influence is involved in promoting the action.

Many adult students are self-motivated though this is not true to any appreciable degree among the hard-core unemployed. In this group, due to little confidence in their ability to learn and succeed, constant re-motivation is required. Motivation may be built upon trainee curiosity, interests, or goals; upon the need for acceptance, security, or recognition; or upon the need to conform to his peers.



Learning is a progressive change, a change in attitudes, appreciations, understandings, or behavior. In MDT programs this phase of learning holds equal importance with Basic-Remedial and occupational training. This is true since desirable attitudes and behavior enable trainees to hold jobs after they are obtained through benefit of Basic-Remedial and occupational skills.

Regardless of whether learning is a change in attitudes, behavior, and appreciation, or the acquisition of knowledge, skills, and techniques, the trainee will not really learn until practice makes these a part of him. In short, the trainee has to be involved in the learning process by behaving in a way, or by doing something he was unable to do prior to entering the program.

As the trainee makes contact with people and things around him he learns through the five senses, sight, hearing, touch, smell, and taste. These are his means of contact with everything and everyone about him. Sight (video) and hearing (audio) are of the greatest importance in learning. Whereas some trainees will show that they learn better by listening, others will learn more easily by seeing, while more learn most effectively by a combination of audio and video methods.

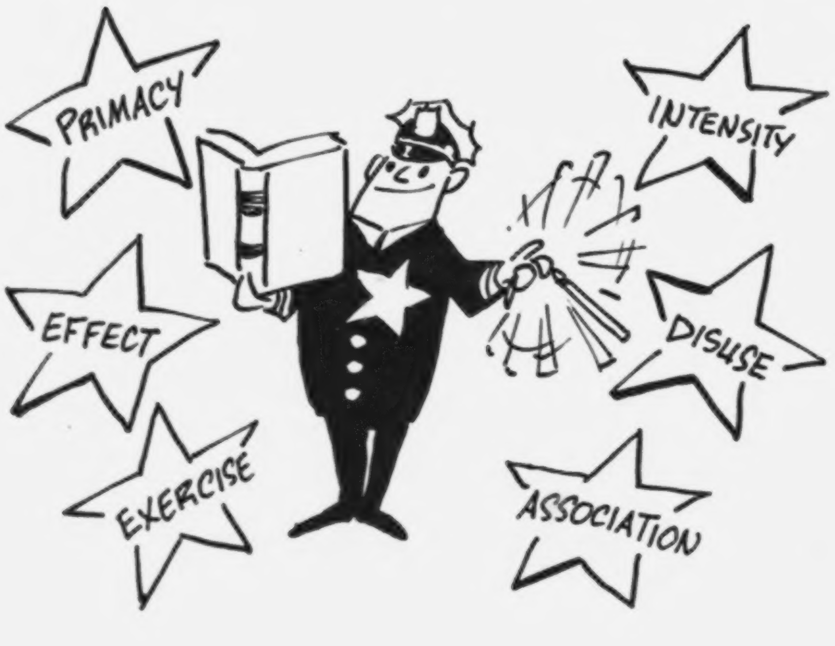
We are told that we retain approximately 10% of what is read, 20% of what is heard, 30% of what is seen, and 50% of what is seen and heard. It is an accepted fact that individuals learn still faster when doing is added to seeing and hearing.

THE LAWS OF LEARNING

It will be helpful for the instructor to recall and understand the six basic psychological laws which control and affect learning. These are the Laws of Primacy, Effect, Exercise, Intensity, Disuse, and Association. Each will be discussed briefly.

The Law of Primacy refers to that which comes first. Thus first impressions are extremely important for they are the most enduring. For this reason the wise instructor will make careful preparations for his first day with each class. Not only is a good first impression vital but of equal importance is stimulating student interest as early in the training program as possible. The Law of Primacy also implies the importance of learning correctly the first time content or procedures are presented.

The Law of Effect is based on the principle that if one derives satisfaction from an act he is more likely to behave or perform in the same way when the opportunity occurs again. It is said that nothing succeeds like success. Why is this? The answer lies in the simple fact that no one enjoys being a failure. So it naturally follows that individuals enjoy and accept that which is pleasant and satisfying. Thus the instructor should make every effort to develop stimulating class periods to catch and prolong early and often unwilling curiosity and interest. If trainees derive some personal satisfaction or success in each class then they learn new ideas or procedures more willingly.



The Law of Exercise is based on the premise that the more often a mental or manipulative act is performed the easier it becomes. Be sure trainees perform correctly the first time to form the right habit of use; then provide repetitive exercises to give emphasis and strength to the practice. The more frequently an act is repeated the more quickly a habit develops. Since incorrectly performed acts form undesirable habits which are hard to break, the instructor should avoid faulty practice procedures. For example a word once mispronounced, thereafter is more difficult to pronounce correctly.

The Law of Intensity refers to the fact that information which is dramatic, realistic, and exciting is more likely to be remembered than that which is boring, unrelated, or unrealistic. This does not imply that the classroom should be turned into a three-ring circus, but that the instructor should keep subject matter alive with interest and applications. Since most learning in Basic-Remedial Education classes easily can be oriented to the occupation or to on-the-job situations, instructors have a ready-made means of providing live applications.

The Law of Disuse is based on the supposition that skills not practiced or repeated soon are lost or forgotten. For this reason skills of all levels should be repeated and used in different exercises and situations as a means of review and as a method of reinforcing the earlier learning process.

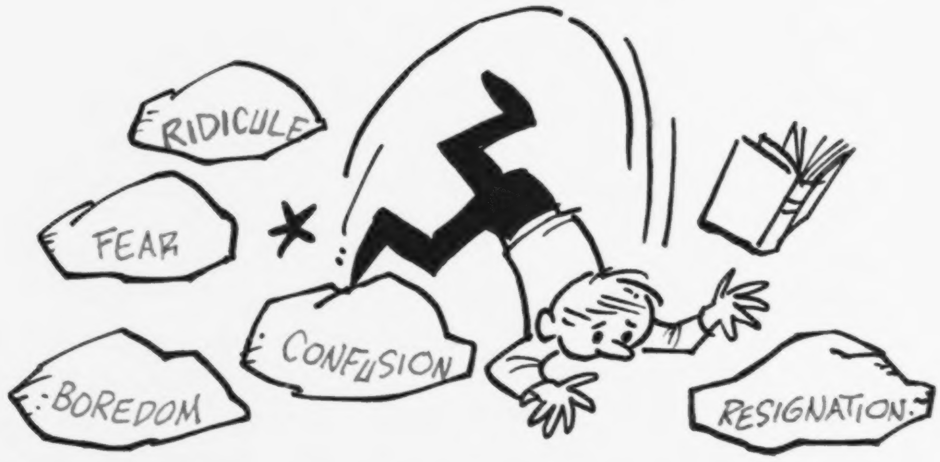
The Law of Association refers to the principle that all new knowledge is associated with knowledge already possessed. Certainly learning is more simple and rapid if it can be associated with something already known. However, here may be a stumbling block for many trainees since their prior knowledge and socio-economic backgrounds are limited. Hence the association of new facts and procedures may be slow indeed, and certainly will have to be built upon a process of gradually acquiring knowledge to provide a foundation for such association.

BLOCKS TO LEARNING

In addition to the problems implied in the discussion of the laws of learning, trainees may have feelings or attitudes which serve to block learning. It is commonly recognized that boredom is one of the principal causes of high school dropouts. In MDT programs the same can be true so the instructor needs to plan challenging and unusual class sessions as different as possible from the earlier school experience of the students. The work should provide for success, should be neither too easy nor too difficult, and should refer pointedly to trainee life or occupational training. Optimum progress grows from instruction based on individual needs.

Another obstacle to learning is fear. Apprehension may take the form of fear of failure or fear of ridicule by instructor or classmates. For this reason concentrate on providing for trainees some small successes early in the program.

All students react adversely to confusion in the classroom. Disorganized class procedures and materials present blocks to learning. Brief, clear statements and instructions prevent confusion and the irritation which often results. A neat, orderly classroom encourages orderly thinking and learning.



BLOCKS TO LEARNING

In regard to learning, trainees show their emotions in different ways which the instructor should recognize. Some through projection will blame someone else or some situation as the reason for not learning. Others will rationalize or state a reasonable explanation which does not get to the root of the matter. Some evade learning through aggressiveness by being discourteous, angry, loud, or contemptuous. Still others escape through flight, or by finding a reason not to attend class. Some few, resigned and showing no interest in their surroundings, give up altogether.

While evidences of these emotions are indicative of inner upheaval it is best to treat the trainees with warmth, understanding, and as you would wish to be treated if positions were reversed.

ADULT LEARNING

The adult learns best when he recognizes his need for learning. If a family is hungry, and the head of the household cannot get a job, then he realizes the need for training so that he may support and sustain his family.

Second, adults learn best when several senses are involved. Appealing to the learner through more than one sense is suggested. Include a variety of practical applications in demonstrations and other class media.

Further, to promote learning the instructor must show sincere personal interest in the student. At best it is difficult to return to school after one has been away for a considerable period. The instructor should employ every means possible to encourage and appreciate any effort indicating student progress.

All students, but especially adult students, learn best when learning is related to use. It is especially important for the Basic-Remedial Education teacher to remember to make applications to the real-life situations of the trainees.

Though learning can occur nearly anywhere with enough determination, it is true that pleasant, cheerful surroundings contribute appreciably to making learning easier. Room arrangement with special attention to table and chair grouping can be beneficial or detrimental depending on the rigid formality or relaxing informality implied. Other means, such as smoking in class, show a casual, relaxed atmosphere in action.

All students, but particularly adults, like to realize progress is being made. Progress charts, bulletin board posters, and various imaginative and original devices can be placed in the classroom to indicate the progression rate. Forms of evaluation, not termed tests, but more of the self-test type, can be useful if skillfully utilized.

Individuals learn from those with whom they associate. A negative group attitude retards the learning of all. Thus, the instructor should promote a pleasant sociable give-and-take informality to encourage participation by everyone.

MOTIVATION

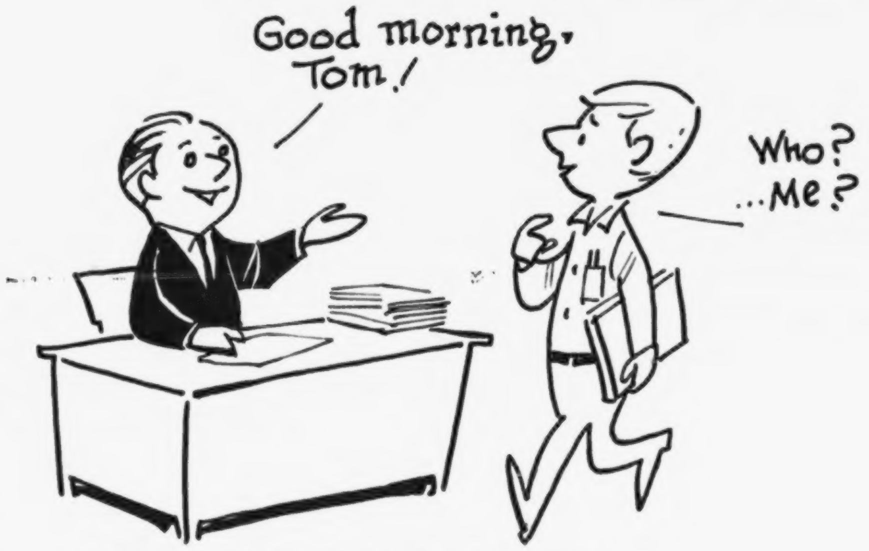
MOTIVATION

Motivation may be defined as that something, emotion, need, or desire, which causes a person to act. In education it carries the connotation of the stimulus which causes students to be receptive to learning, to be willing to try to learn, and to give direction to the learning thereafter.

The instructor must realize the importance of motivation and make a real effort to use incentives to promote learning. With the culturally deprived trainee, one motivating factor of value is the need for security or the need to qualify for and hold a job to provide sufficient income to support himself and his family. Though most trainees are aware of this need, it can be utilized as a motivation for learning.

Because of the dearth of experiences in the lives of such people, offering new and unusual events in which they may participate proves effective as an incentive to learn. Many trainees have never attended a band concert, eaten at a good restaurant, visited the legislature, walked in a park, or in some cases walked through the better stores and shops. Few are familiar with the history of the community or its historic sites. Field trips are useful to broaden the background and to increase the knowledge of the trainee. From field trips the student realizes the need for the ability to read bus and road signs to help him move about in the community. Participating in trips and new experiences gives insight into "another world" and will prove exciting and interesting as well as good motivation for further learning.

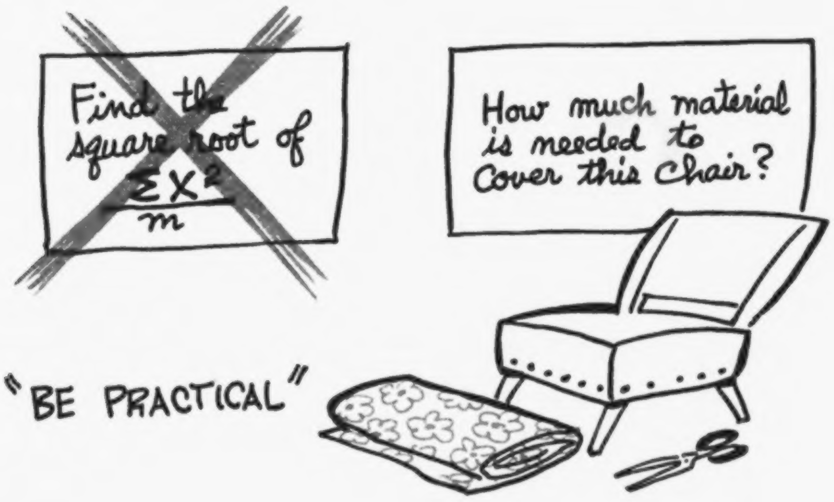
Nearly all trainees feel a need for recognition. The wise instructor will utilize this need as a motivating factor. Minimize errors. Recognize any possible progress or success, however small. Follow the rule of praising in public and criticizing in private. Always precede any derogatory comment with a word of commendation for the part of the work correctly performed. Greet the trainee inside, and outside of class as well, in a warm friendly manner to show sincere interest in his welfare. Listen patiently if he wants to discuss his problems. Often it is enough to have someone just listen. If necessary ask questions to help him think out the problem as a means of suggesting possible solutions. The trainee probably will be ready to learn after he solves his problems. Recognition also may be implied by occasionally letting trainees act as leaders in group discussion or activities.


Good morning, Tom!
Who? ...Me?

NEED FOR RECOGNITION

Trainees may have a poor opinion of themselves. This is evidence of their need for self-esteem or for a feeling of self-worth. Any legitimate means the instructor can use to change feelings of inferiority will prove useful for motivating purposes.

Nearly all individuals, young or old, are conformists, feeling a great need to follow prevailing standards and customs. Inability to conform due to economic and cultural problems provokes frustration and rebellion. The instructor may exploit the need for conformity to encourage learning.


~~Find the square root of $\frac{\Sigma X^2}{m}$~~
How much material is needed to Cover this Chair?

"BE PRACTICAL"

Most people enjoy being needed, and like to help others. The Basic-Remedial Education instructor has an excellent opportunity to use more capable and advanced trainees as assistants to encourage study sessions and learning by the less able students. This is not to suggest that this be a standard operating procedure, but rather that it encourages leadership and fills the need to help others as well.

Let us be practical. The instructor who assigns twenty math problems or ten pages of reading as an assignment makes little use of motivation. However, if it is demonstrated to the trainee how those twenty problems or ten pages of reading will help in everyday living or in the occupational training, then a motivating factor is involved.

Any assignment should include the lesson objective or what the trainee should achieve by the study, and it should emphasize why the particular lesson is important to him and his future. If patient and interesting explanation is used thus, motivation has been injected into the class procedure, and .. is likely that learning will occur more easily.

Following the foregoing suggestions should encourage greater receptivity to learning.

RETENTION

To be useful, learned material must be retained. Retention has two aspects, recall and recognition. Recall refers to the remembrance, or reproduction in detail, of that which has been learned or experienced. Recognition on the other hand implies inability to reproduce knowledge in detail but does involve ability to remember it as familiar. A greater degree of retention is required for recall.

To be retained, knowledge must be meaningful or have significance, and have an established relationship or reason for being learned. Through repetition, or repetitive practice, (often termed overlearning), retention is improved. The Basic-Remedial Education instructor should make extensive use of repetitive exercises, though the applications may vary.

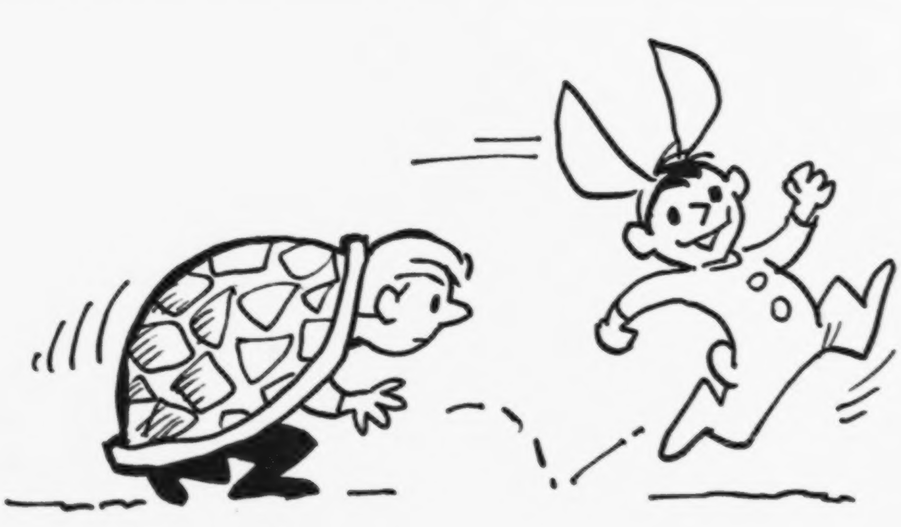
Review of material studied is an added aid to retention. Daily, weekly, and unit reviews prove valuable in retaining the initial learning level.

COMPREHENSION

Comprehension may be defined as the capacity for understanding. If material read is comprehended it is understood and can be reproduced competently. Further it may be used in context, to apply to the solution of problems, or in conversation. An increase in the knowledge of words and in the reading rate work to this end if accompanied by understanding. The foundation for understanding lies in the past lives and experiences of the trainees, often a meager foundation to be sure. Comprehensionin the Basic-Remedial class may be improved further by a steady process of orienting knowledge to past experiences and to occupational instruction.

PROGRESSION RATES

Progression rate is a term which refers to the forward speed of learning. The measure of progress varies in any group of individuals but perhaps more widely among the disadvantaged.



Some variables affecting trainee progression include age, intelligence, prior education, economic and social needs, motivation, desire, determination, willingness to work and study, attitudes, and feelings of fear, worry, anger, and frustration. The instructor should inventory trainee background to become cognizant of the variables affecting each one. Upon this knowledge, motivation may be devised to suit the need.

Naturally progress will prove slower for some than others. Not all trainees will be on the same achievement level. Some trainees will be young; some will be mucholder. The older trainees may progress more slowly though this is not always true. In a class, wide differences will be so apparent that the instructor may be concerned about the different levels of instruction required. Thus, it should be pointed out and emphasized that individual instruction must be relied upon as the method likely to produce the most progress. Because individual instruction permits each person to work at his own rate of speed, the trainee is relaxed and free from the pressure of strong competition by his peers. Each one competes with himself, progressing as rapidly as he is able.

In the classroom on a bulletin board may be kept progress charts marked to show each student's completion of the sequential units of study. As a result of individual instruction the teacher does not have more time, but is available as required to assist the trainee who indicates his need for help from time to time. Progress charts not only measure performance but serve as a means of motivating the trainee as well.

APPLICATIONS–An aid to learning

On numerous occasions it has been stated that need affects learning, and that trainees must understand the reason for having to learn certain specified material. In the Basic-Remedial Education classroom the instructor has excellent opportunities to use occupational information to demonstrate these points. Perhaps the following will explain.

Suppose the students are involved in a Farmer General program from which a wealth of material can be derived for use in Basic-Remedial Education classes. For example in math, some applicable topics might include a study of credit and credit terms; interest rates, and computation; banks and banking procedures; keeping records of purchases and sales; social security and withholding taxes; notes and loans; income tax records; and depreciation schedules. In communications, reading could cover information on breeds of cattle or other farm animals; transportation; legal problems (contracts, deeds, and wills); taxes; bankruptcy; water rights; fence laws; labor and labor problems.

If the trainees are enrolled in a Food Service program the following applications could be used. In math fundamentals of computation apply to the prices of the foods on the menu, making change, and operating the cash register. Also involved are tips, social security, and withholding tax. The communications class could emphasize legibility of writing, and oral expression as a means of contact with the patron.

These serve as only a few examples of how instruction can be oriented to the occupation to showing the trainee a need for the knowledge, understanding, or skills derived from Basic-Remedial training.

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INDIVIDUAL DIFFERENCES

It should be recognized that learning occurs at varying rates for no two individuals are alike in heritage, culture, economic background, need, or desire. Individual differences do exist among students. Means for recognizing the extent of differences include observing the comparative amount of subject matter absorbed, comprehended, and retained. Though some standardized tests are not always usable for trainees, generally they are a valid means of checking achievement and intelligence. The private conference, and sometimes a casual conversation where students may ask the questions troubling them, provide other ways of analyzing individual differences.

Trainees differ in mental capabilities as well as in physical makeup. Some of the factors in learning in which individuals differ follow.

INTEREST

Interest - With interest on the part of the student, instruction comes alive; without it, it is almost useless. Individuals learn that which interests them, but cease to learn when bored or unable to see any pertinent application of materials presented.

Background - Past background, (rural or urban, united or broken family, education, race, culture, deprivation), forms the foundation for understanding additional knowledge.

Intelligence - Intelligence is the ability to successfully associate new ideas and knowledge with past experiences. Intelligence is innate, changes little throughout life, and is not increased by education.

Concentration - Concentration refers to focus of the power of attention. The attention span is brief but can be refocused quickly with practice. Most trainees have a short attention span with little ability to refocus for prolonged concentration.

CONCENTRATION

MEMORY

Memory - Recall or ability to remember is an important factor in learning. Memory is influenced by frequency and repetition of knowledge, by the importance to the individual, and by the vividness or uniqueness of the fact.

Self-confidence - If an individual thinks he can learn something, he can do it more easily than if he thinks he cannot. Fear of any kind makes learning difficult and often impossible. For this reason a trainee should not be given a task beyond his ability to perform.

COMFORT

SELF-CONFIDENCE

Comfort or well-being - Being comfortable and fully at ease increases the ability to concentrate whereas anger, worry, grief, and annoyance make learning more difficult. The good instructor makes class members comfortable and at ease before beginning a lesson.

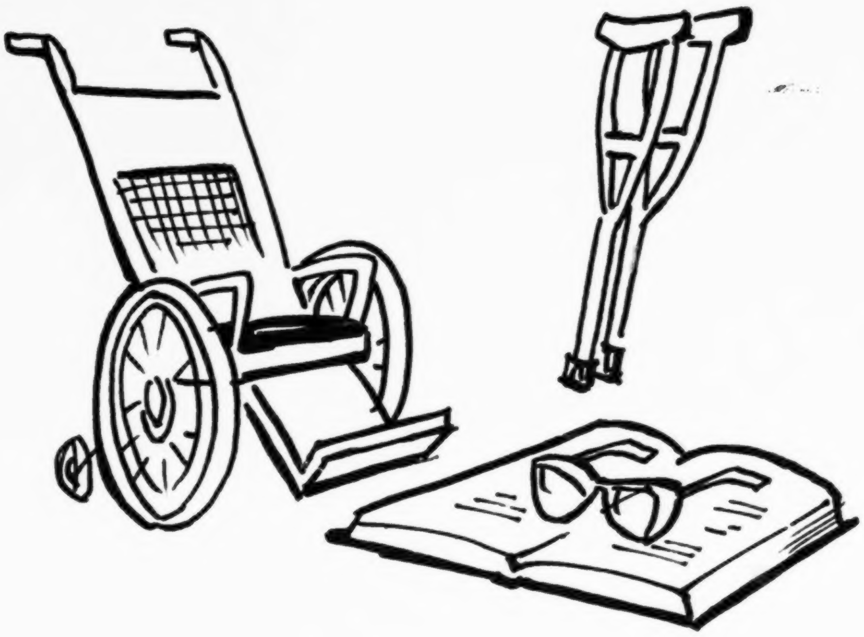
Imagination - Forming a mental image of something not present is an ability invaluable in many trades and crafts.

The factors just listed have shown some of the ways in which people differ, and how they affect the reasons for learning as well as the speed and thoroughness with which they learn.

THE EXCEPTIONAL TRAINEE

Who is the exceptional trainee? Any individual who requires special educational or psychological aid in social adjustment whether because of superior ability or because of physical or mental defect is exceptional. Though intellectually superior students are classed as exceptional, only a few appear for MDT programs. Of course, each who does enter should be provided with every opportunity to reach his full potential. For comment here, however, primary concern is directed toward other kinds of exceptionality based more on the socio-economic handicaps which prevent success in the regular public educational programs. Singled out for discussion here are the academically disadvantaged; the retarded; the physically handicapped group with sensorial, motor, and speech problems; and those with emotional, psychosomatic, and basic social problems.

In view of the definition stated in the previous paragraph many MDT trainees can be classed as exceptional. For this reason consider their special needs beyond the basic economic and occupational requirement. Many require counseling and guidance for personal problems. Some have difficulty in communicating. Other trainees have attitudinal problems resulting from emotional instability in self or family. Still others have multiple physical deficiencies and diseases, health impairments, crippling disabilities and/or amputations which have prevented earlier development of innate abilities. Some may be mentally retarded or so academically disadvantaged as to seem retarded. They are handicapped, but in spite of such problems, all must be helped to develop the entry level skills needed for employability. Understanding and recognizing the exceptional individual is basic to accomplishing the MDT program goals, and to helping meet the special needs of this type individual.



The 1967 Report of the Secretary of Health Education and Welface to Congress on the Manpower Development Training Act (page 10), states that in 1966, 42% of all trainees referred had multiple disadvantages or handicaps of one kind or another. This fact points up the need of providing special services to ameliorate the problems of such trainees before they can be in position to take training advantageously.

The increased enrollment of severely handicapped individuals reflects a growing emphasis on reaching the trainee of limited mental capacity and/or multiple physical, mental and emotional handicaps. Insofar as possible, development of a sound body is essential before training of the mind and development of skills can occur, for it is an accepted fact that poor health and recurring ailments are a chief cause of inability to take training.

THE ACADEMICALLY DISADVANTAGED TRAINEE (Retarded)

One form of individual difference not discussed to this point has to do with the retarded trainee. Though some enrollees are only mildly mentally disadvantaged, some are rather severely deficient in this respect. In this discussion concern is stated only in regard to Basic-Remedial Education for the educable mentally retarded group.

Only a few years ago the mentally retarded individual was pushed into a corner, forgotten, or disregarded. From an educational standpoint it was assumed that even the educable mentally retarded could go only so far in school and were worthy of little concern educationally. Today, in some cases, academically limited students are graduating from high school through modernized and revamped vocational programs. This is not to say that this type of trainee can always profit by occupational training. However, training of the right kind, either in high school or afterwards, can change and give direction to the lives of many who would be financially, physically, and/or emotionally dependent upon others throughout life.

New methods of instruction wherein each trainee is taught on an individual basis suited to his background, abilities, and needs are admirably adapted to teaching the retarded. The special attention, close supervision, and individual instruction all combine to improve self-respect and the self-image, and to encourage a belief in the ability to succeed. Even though successes may be small, each eventually builds into some measure of self-confidence and advancement. Since progress will be so slow as to be almost imperceptible, the instructor constantly must remind himself to be patient and content with each tiny step forward.

Many retarded individuals, considered stupid by their families, so frequently and repeatedly have been told they cannot learn that they accept this evaluation and no longer try. Improvement of the self-concept is basic to any anticipated progress. Some slow students exhibit frustrations evidenced through fighting with their peers, rebelling at authority, showing anger, and stubbornly refusing to cooperate. Patient, friendly effort by the instructor encourages maturity and a measure of self-understanding as does also association with fellow trainees.

Many educable mentally retarded individuals can become self-supporting if provided training in occupations which require skills within their capabilities. Laboratories and/or shops may offer experiences related to unskilled and semi-skilled jobs in hospitals, nursing homes, motels, and hotels where the demand is great for workers willing to perform the simple, repetitive duties required. Some phases of food service training and woodworking also may offer possible types of occupational preparation for the educable mentally retarded (EMR) trainee.

In a MDT pilot woodworking project, one case should be mentioned. The students, of varied levels of retardation, were referred by Employment Security, or recommended by the judiciary and the Division of Vocational Rehabilitation, and had come from the streets of the neighborhood or from a nearby institution for the retarded. From this institution, one boy in particular illustrates the point that not all trainees evaluated as mentally retarded actually are.

John, age nineteen, had not spoken since before he was about five years of age. Bright-eyed and attractive, he had the appearance of an alert teenager.

During the first two weeks of the project, John had fist fights at breaks, lunch hours, and in other ways exhibited his anti-social feelings. Within this period of time, the instructor had repeatedly counseled with the boy without getting any verbal response. However, in the third week some behavioral improvement did become evident. The instructor encouraged by any change for the better, took the boy aside once again, asking if he liked the training program and new friends at the facility. Following each question, John nodded in assent.

The instructor continued by telling John that he must talk if he wanted to stay in school and get the help he needed. He emphasized that he would not be acceptable for a job unless he would talk out loud. He concluded by insisting that he make up his mind to talk if he wanted to work following the training program.

The next day at noon John surprised another trainee by answering "Yes" to a question instead of nodding his head. To the surprise and delight of all, ten days later John was reciting regularly in class. (John at this point was observed by the writer as he recited in class.)

Why the many years of silence? Probably no one will ever know for certain. Could it have been due to the rather slight, not too unpleasant, speech impediment John showed in class recitations? Had family and friends teased or ridiculed his childhood speech patterns so that he withdrew and silenced himself for years? Whatever the reason, after four weeks of individual attention and knowing that someone cared about him and regarded him as a person of value, John responded. He literally "blossomed" into quite a personable young man by the close of the project. Subsequent developmental evaluation of John's rapid progress showed too that he was somewhat above the lower levels of retardation. At the end of the training period he was employed and became self-supporting.

This case indicates that prejudgment of trainees, retarded or not, is unwise; that patience, understanding, love, and individual attention often reap unexpected rewards in trainee progress; that retardation may not always be a fact, but a supposition; and that some improvement can be anticipated in many instances.

What is the role of the Basic-Remedial Education instructor in teaching the EMR trainee? Largely the instructional goal is the same as for any other MDT enrollee, namely, to prepare for entry-level employment. However, certain differences should be noted.

First of all, for this group the approach to any phase of math, communications, or related study should be as simple as possible, and in a form applicable to the trainee's capabilities, everyday activities, occupational training, and prior knowledge, or skills. In other words through usage, applications, and creative activities, instruction is apt to be successful in some measure at least.

Second, plan to introduce subject matter in tiny amounts, and at a very slow rate. Expect minimal progress, but expect it; and never allow any discouragement to be obvious to the trainee. Repeat every phase of instruction many times, varying the application and/or usage, for through repetition learning will occur to some extent. Accept the fact that only slow progress can be expected in most cases, almost no progress in other instances, and realize that any step forward portends a gradual betterment of life for the retarded trainee.

The math instructor in particular may wonder how to teach fundamental mathematics to mentally disadvantaged individuals. Since most EMR people learn best through visual perception and manipulative activities, the math instructor probably should base the instructional approach upon these facts. Use can be made of wooden blocks to teach addition and subtraction of whole numbers, and with adequate planning can also be utilized for the study of fractions. Making change, and handling money to pay for "purchases" in class, are practical applications.

The communications teacher may offer instruction in manners, transportation problems, health, hygiene, first aid, citizenship, money and banking, and safety. Role playing is a desirable means of amplifying such instruction. Simple games also form a practical, attention-getting means of teaching retarded trainees.

In general instruction is much the same for retarded students as for any others except for the fact that it must be very much slower, offered in minute quantities, and repeated almost ad infinitum. Patience, and encouragement offered frequently and repeatedly by the instructor are absolute requirements if any success is to be achieved.

Much experimental work currently lends encouragement for improvement of the educable mentally retarded. At the Institutes for the Achievement of Human Potential, in Philadelphia, Pennsylvania, Drs. Glenn and Robert Doman and Carl H. Delacato, psychologist, have developed systems of reorienting the retarded and the brain damaged, or brain dysfunctioning individual through neurological reorganization. Crawling, eye exercises, and other methods seem to portend improvement for many retarded individuals as well as a new day for the slow student who often has reading problems. Especially aided through creeping and eye exercises is the student with reading and writing difficulties which, it is thought, seem to come partially from a lack of visual and functional one-sidedness. Just developing eye coordination and full one-sidedness often brings about considerable and rapid improvement in reading progress and comprehension as well. [1]

This is not to suggest that the Basic-Remedial Education instructor should introduce a series of lessons in crawling as a means to reading improvement, for neurological reorganization should be planned and supervised by skilled specialists. However, in an effort to understand some of the blocks to learning the teacher should be informed on new developments affecting the retarded and the Basic-Remedial Education field. [2]

The success achieved in training the retarded individuals in the earlier mentioned pilot project, titled Miscellaneous Wood and Furniture Finishing, should be noted. The initial project, which had a training period of twenty weeks, was repeated three times, with fifteen students enrolled in each.

In the initial group of fifteen graduates, nine were employed and had stayed on the job six months; two were employed but stayed on the job only for a brief period of time; two were unemployable; and two were reassigned to the second project for additional training.

From the next three training periods, placement averaged 75%. The individuals had stayed on the job at least six months when the data was gathered to provide this figure.

The question might be asked as to difficulty of placement. One local woodworking industry, The Davis Cabinet Company, employed a large percentage of those placed in jobs. For their outstanding record of employment of these individuals with special needs this particular firm received the Governor's award as the outstanding employer of the handicapped for 1967.

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[1] Bird, John. When Children Can't Learn. Curtis Publishing Co., Saturday Evening Post, July 29, 1967. Philadelphia, Pennsylvania, 19105

[2] Snyder, Donald R. Giving the Retarded a Chance. Washington, D.C. 20036, N.E.A. Journal, September, 1967

The success achieved in training and placing approximately forty-five of the sixty enrollees on jobs where each had remained for at least six months, seems remarkable. This record should give some hope to families of the retarded, and encourage instructors of this type trainee to increased patience, effort, and interest in teaching the very slow student.

Though it is true that a relatively small percentage of MDT trainees can be identified as severely retarded, yet occasional individuals of this type are found in the occupational and pre-vocational programs. In some institutional training classes individuals with below 50 I.Q. levels have been referred. Unbelievable as it may seem, one trainee with an I.Q. of 48 appeared at a training facility wearing a high school ring and carrying a high school diploma. Investigation showed that this student had been in Special Education classes all his life, so that the MDT program was his first enrollment with people of average mental capacity. Subsequent attempts to train this young man showed him to be dangerous to himself and to other trainees in the shop areas. In fact he advanced little and was not educable when competing in a normal situation. Doubtless, however, he could achieve some improvement in a protected shop area with his own kind and with training suited to his capabilities.

THE PHYSICALLY HANDICAPPED TRAINEE

Many individuals entering the MDT training program are physically handicapped. Some of these, referred both by Employment Security and by Vocational Rehabilitation counselors, already have been assisted through medical examinations and care. Others enter the program with a variety of unrecognized and untreated physical problems such as (1) faulty vision due to need of glasses or due to eye defect or disease; (2) impaired hearing; (3) dental caries, abscesses, and gum diseases; (4) heart impairment and respiratory deficiencies; (5) speech impediments; (6) skin lesions, eruptions, and pigmentation problems; (7) tuberculosis and/or other communicable diseases; (8) walking and other problems of ambulation; (9) underweight and obesity; (10) amputations or loss of a member such as limb, finger, etc., and (11) deformities. Correction and treatment of as many physical problems as possible should occur before or soon after the project begins if the trainee is to benefit fully from the training.

Thus it seems that extension of education through occupational training and Basic-Remedial Education is only a part of the aid which must be provided for the handicapped trainees. The problem is to extend instruction by correlating the program with the services of various agencies, both community and state. In most training facilities this responsibility rests with the guidance department. The counselor through interviews determines the problem, and refers any eligible individual to local or State agencies such as the Public Health Service, Red Cross, community service organizations, and Vocational Rehabilitation. This latter service often can assist those individuals with heart problems caused by rheumatic fever, ambulation difficulties due to brain damage or to damage of the central nervous system, and dental caries for extractions and plates. The Public Health Department may provide X-rays for detection of tuberculosis and other lung diseases as well as protective injections of varied types.

Improving the condition of the physically handicapped trainee is as important to the Basic-Remedial Education instructor as to the other staff members of the training facility, or satisfactory health is basic to learning and to holding a job once the trainee is employed. In communications classes through reading, oral presentations, and panel discussions, much useful knowledge can be imparted to trainees on health and hygiene, personal and community health problems, and means of preventing common illnesses. This information can be applied and made meaningful as a means of preparing the student to stay on the job when employed since absenteeism is a major cause of job dismissal.

Counselors generally agree that the severely physically handicapped trainee usually is an interested trainee, and probably among the best enrolled. For many the training is the first real opportunity presented for developing skills needed to obtain employment. This group then as a rule is highly motivated. Though it is true that a few may be filled with self-pity, on the whole the physically handicapped individual has learned to live with the handicap and often has overcome the many problems caused by or related to it.

Due to the fact that poor health and physical handicaps affect a substantial number of MDT trainees, part-time medical services in the larger training facilities would be a decided asset. Whether this special on-the-spot service can be added is questionable in spite of the fact that health improvement and/or assistance would prove a tremendous factor in accomplishing a major goal of MDT training, namely, the development of human potential and resources. Medical services which could assist with acute illnesses, also would aid in improved health of trainees who otherwise would drop out of the training program because of chronic physical problems.

THE EMOTIONALLY DISTURBED TRAINEE

The noted anthropologist, Ashley Montague, at the 60th American Vocational Association Convention, said that most of our schools, colleges, and universities are primarily dedicated to achieving the kind of success which leads inevitably to the ill health of the individual and his society. Further he added that from this viewpoint he would soberly and seriously define the contemporary American family as an institution for the systematic production of mental illness in each of its members. This is a sad commentary, indeed, but worthy of note by MDT instructors, since many trainees may be emotionally disturbed.

In some cases students enroll immediately after dismissal from institutions, or in other instances may be attending classes as outpatients from mental hospitals. These trainees attend classes during the day and return to the institution at night. Still other trainees never before under treatment, enroll, and upon recommendation of the counselor, may be referred for psychiatric care to nearby medical school clinics where treatment may be obtained for emotional problems.

The Basic-Remedial instructor should be aware of the prevalence of mental and emotional illness today; and refer to the counselor any individuals whose erratic behavior indicates any type of emotional imbalance. Early identification and referral of affected trainees offer optimum opportunity for adequate assistance.

PSYCHOLOGY OF THE EXCEPTIONAL INDIVIDUAL

Generally it is felt that the handicapped individual is different in some fundamental respects from the average person. This relates to the idea that the disabled are psychologically abnormal. This is not necessarily true. It is a fact, however, that individual reactions to physical disability differ but are not abnormal as a matter of course, though the severely physically disabled often have deep-seated psychological problems.

Basically, however, disabled trainees are the same as other students, and have the same essential needs, aspirations, and desires. A disability should be regarded as only one aspect of the trainee who has not only the special problems of the disabled but the same problems of earning a living and interrelationships which affect most people. Generally speaking, the psychological factors of disability are apt to be largely in the minds and attitudes of those around the disabled rather than within himself.

The Basic-Remedial Education teacher in conjunction with other staff members should encourage the disabled to be self-reliant and independent in thought and action. Training for employment within the capability of each is just as important for the disabled as for other trainees for work brings material, social, and psychological satisfaction and fulfillment achieved in no other way.

The trainee with a disability whether congenital or acquired, visible or invisible, may require the special attention of the instructor until a form of individualized class activity can be adapted to his special needs. Thereafter he should be encouraged toward self-reliance and independent study, and insofar as possible treated like any other trainee.

TEACHING THE TRAINEE HOW TO STUDY

Trainees have been out of school at least one year, and some as much as twenty or thirty years. Understandably they have forgotten how to study if they ever knew. Their habits of concentration usually are poor, and nearly all are frightened that here they will fail once more. So it is important that the Basic-Remedial Education instructor make a concerted effort to direct them in how to study that they may rediscover the real satisfaction which comes from learning. The suggestions listed below are pertinent for the trainee to follow in establishing study habits.

Pointers for Learning to Study:

1. Assemble all needed books, papers, pens, etc., needed for the study period.
2. As much as possible continue to use the same place for study if it proved satisfactory initially.
3. Concentrate on work. Don't daydream. Don't allow thoughts to dwell on anything except the lesson.
4. After preliminary study, ask yourself questions, or "tell" the material to yourself.
5. Look for the basic thought or basic principles.
6. Study with pencil in hand. Take notes, and/or underscore important material in the text if permitted to do so.
7. In a reading assignment:
    a. Survey the entire assignment quickly.
    b. Read the section headings.
    c. Reread the topic sentence of paragraphs to get the main idea.
    d. Read the last sentence of the paragraph for summation.
    e. Read the summary at the end of the chapter.
8. Reread the assignment studying carefully sentences which are hard to understand.
9. List, and look up in the dictionary, new words or words not understood.
10. Review total assignment by summarizing it orally, in writing, or both, and by asking yourself questions about the assignment.
11. List questions about items not understood so the instructor can be questioned or asked for explanations.
12. Plan how information studied can be used for practical purposes and/or in relation to the occupational training.
13. Repeat the study process at another time to reinforce learning (overlearning).

14. Use the study questions found in many texts.

15. Ask for help if it is needed.

16. Keep trying. Avoid discouragement.

Trainees should be reminded that the more they use their minds the sharper and more alert they become, that the more they study, the easier it is to study, that learning builds on prior knowledge, and that the more knowledge acquired the broader the learning.

SUMMARY

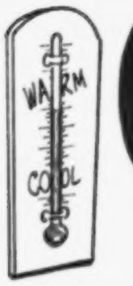
The learning process involves change, a change in attitudes, appreciations, understandings, and behavior. Learning occurs through the five senses which are man's means of contact with everything and everyone about him. The six basic psychological laws which control and affect learning are the Laws of Primacy, Effect, Exercise, Intensity, Disuse, and Association.

Because of variations in heritage, and in the educational, social, and cultural background, trainees differ tremendously in learning ability. Some additional factors affecting learning include interest, intelligence, concentration, memory, self-confidence, and imagination. Inspired motivation builds on these to encourage greater receptivity to learning, improved comprehension, better retention, and more rapid progression.

Understanding how learning occurs should enable the instructor to offer valid assistance to the trainee.

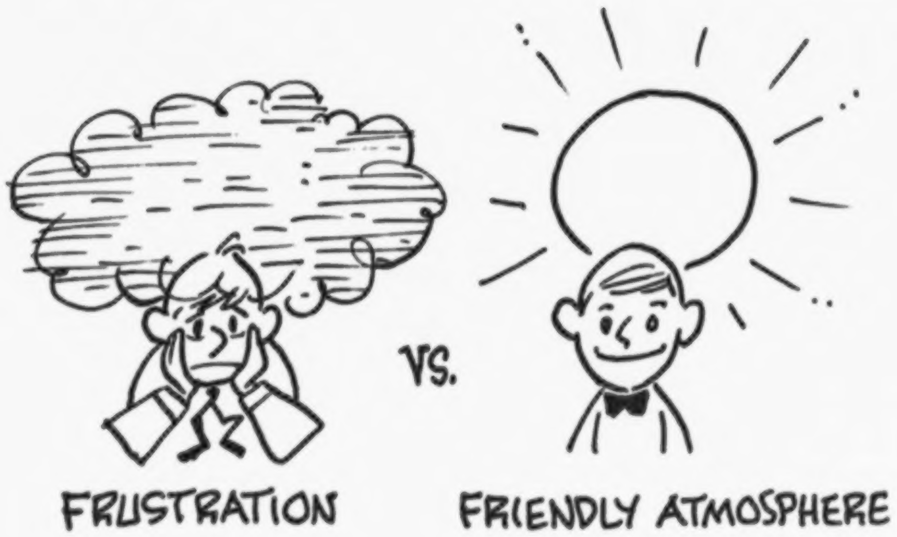
CHAPTER III

THE CLIMATE FOR LEARNING



Classroom atmosphere is of the utmost importance. As the instructor, remember you are the host who sets the tone of each class. A natural, hospitable manner in greeting trainees as they enter the classroom creates the climate for group progress through the friendly informal environment so necessary as a background for the free exchange of ideas.

Although the trainee is accepted as selected and referred by Employment Security, the teachers will be those who influence him to remain for the duration of the training period. The good instructor is the warm, friendly, helpful one who functions on a personal basis according to the individual needs of the trainee. He should reassure all that there is nothing to be feared, much to be gained, and that the training will be pleasant and profitable in every way.



For the trainee even getting acquainted can be a painful process. To encourage early give-and-take plus acquisition of new friends, the simple device of wearing a name tag is helpful. Learning names and making friends promote conversation and a feeling of belonging, or being a valued member of the group.

The classroom atmosphere should be free from threat or any feeling of intimidation. The student who is exposed to cold appraisal or calculated ridicule soon loses interest. When this happens the instructor has to work harder to reawaken interest or even hold attention. This is not intended to imply that the teacher should be overly permissive or protective for each trainee needs opportunity to experiment in inter-trainee and teacher-trainee relationships as a means of personal growth. If mistakes occur, and they will, the instructor should ease the situation and protect the individual from ridicule.

On the other hand, humor and wit are of definite value in any situation. It is important for the trainee to laugh at and with others, but of even more value for him to learn to laugh at himself. As a result he soon recognizes fun as a plus value in getting along with others, an asset in training and an important job application as well.

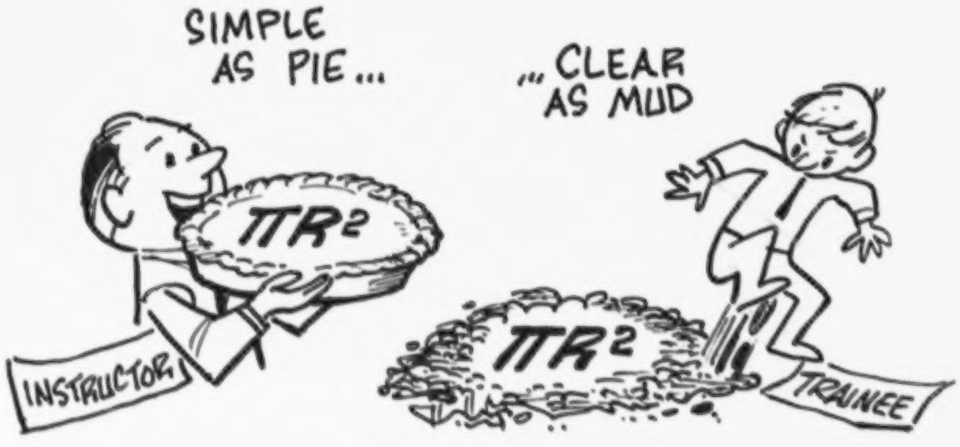
Early in the program the trainee may prove entirely dependent upon the instructor and his peers in the learning process. Nevertheless, the instructor should encourage independence of thought and expression to draw the trainee away from dependence which in itself is a means of repudiating learning. Due to shyness and/or a defeatist attitude many fear speaking out, so encourage participation as early as possible. Help each one realize that his thoughts and ideas are important and worthwhile by expressing approval when appropriate.

A desirable climate for learning demands good communication–instructor to trainee, trainee to trainee,

GOOD COMMUNICATIONS ARE IMPORTANT

trainee to instructor and instructor to instructor. Particularly important is the ability of the teacher to reach the student through the spoken word. Thus, vivid but simple speech should be the rule. Since many trainees are at the dividing line between literacy and illiteracy, or may be termed functionally illiterate, communication through speech and writing can be difficult. Writing the teacher's name on the chalkboard may have no meaning without saying slowly and distinctly, "This is my name. I am Mrs. Allen." Even then some will not hear the name correctly. Failure to give instructions simply and clearly can make contact with the trainee more difficult and add another obstacle to his learning and class participation.

For most Basic-Remedial instructors, teaching adults and the disadvantaged is a new experience. Flexibility is necessary. Encourage new ways of acting or new behavior. Use some role playing. Build on interests and needs as they are evidenced. Be informal and relaxed. Don't pressure the trainees. Accept the fact that many will speak out with the express purpose of shocking you. Realize that this very expression may evidence progress or may be a means of trying to solve a problem. Gain insight into what makes each one "tick" through what he says and does.



Expect that class instruction and assignments as utilized in past classwork probably won't be successful. Be prepared to apply knowledge and skills by relating them to the occupational training. For example does it matter if a waitress trainee can diagram a sentence? Is it not far more important that she learn correct usage such as "I do not have any...." rather than "I ain't got no...." When the trainee realizes that reasonably correct speech is a factor in employment, and that classroom learning is oriented to the job, then learning is easier, and the climate of learning is improved too.

Students always enjoy catching the instructor in an error. Some teachers make occasional deliberate errors to permit being "caught", and as a result encourage mental alertness and a realization that no one is perfect. (Limit this device to infrequent use.) It is good psychology for trainees to understand that they are not alone in making mistakes. Some may be encouraged to participate through this device and by permitting them to correct obvious errors made by each other in the group.

Fun activities improve the climate for learning. Be willing to use games such as Scrabble and Anagrams, student-devised games, or an adaptation of TV programs if valuable group activity is provided. Password, Concentration, and To Tell the Truth are examples of programs which can be used or adapted effectively. (Refer to Chapter VII, Learning Should Be Fun!)

Classroom atmosphere quickly can be weighted or bogged down by trainee expression that nothing in their world is right. Try a "gripe" session. Comments will come from the withdrawn, from the frustrated, the aggressive, and the angry. Is not this communication? Allow time for all to free themselves of their feelings as a means of "clearing the air" so learning can occur.

Of great importance is instructor enthusiasm,–enthusiasm for MDT goals and programs, for the subject areas, for the trainees, and for every-day living. Evidenced and effectively directed, it is catching to the point that others become imbued with it. The result is a successful attitude toward living through a good climate for learning.

LET YOUR ENTHUSIASM SHOW

THE APPEARANCE OF THE CLASSROOM

The Basic-Remedial Education study area should be spacious, airy, and well-lighted. Preferably the wall color should be neutral or pale in tone. Furnishings should be clean, well-dusted, and arranged in a neat orderly manner to suit the activities. An orderly classroom encourages orderly thinking.

Learning stations can be arranged along a wall. Chalkboards should be positioned for ease of seeing and ease of use.

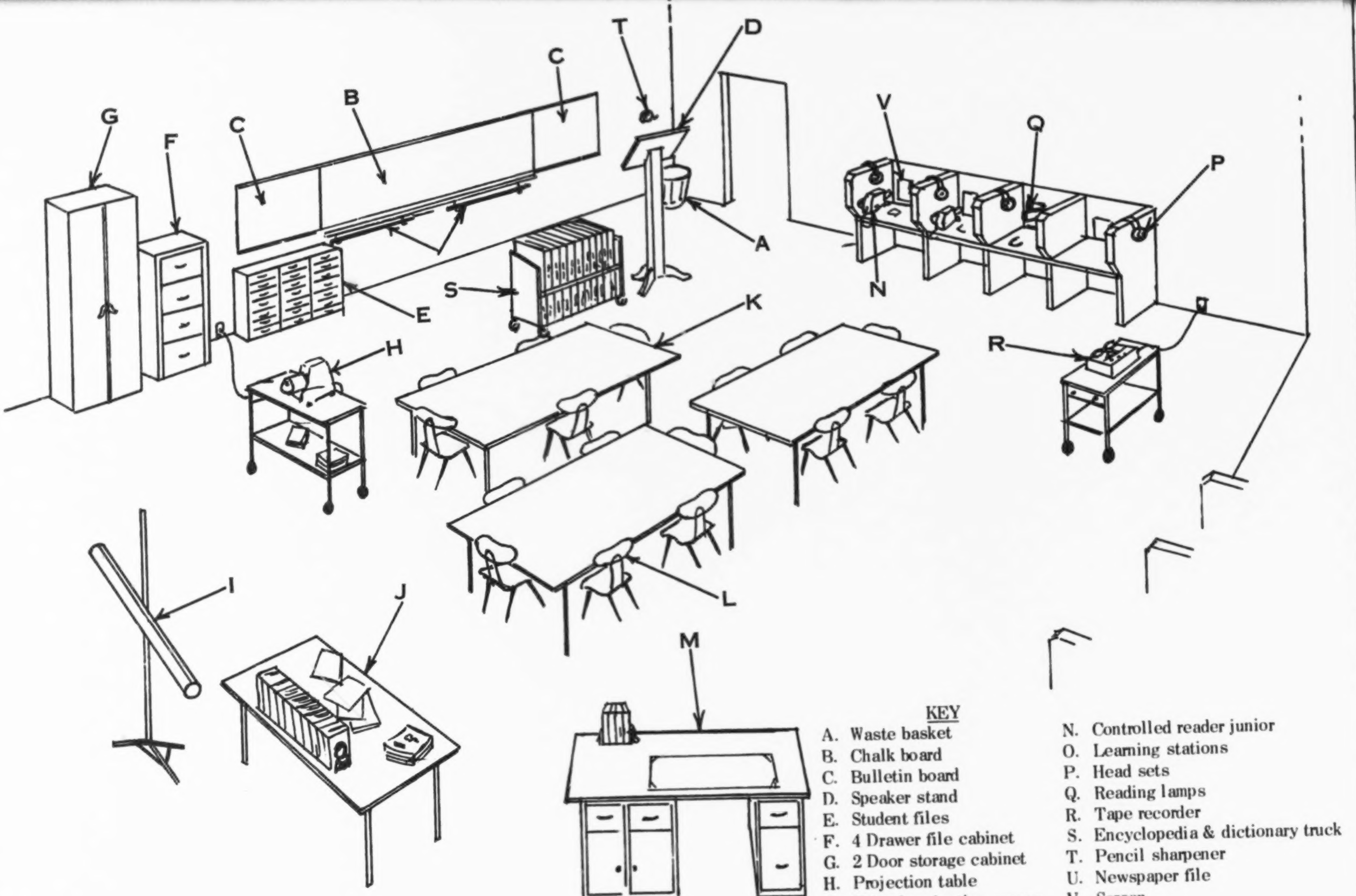
The instructor's desk should be orderly, and for interest, spiced with a growing plant or an arrangement of colorful flowers, live or permanent. Nearby chairs may be grouped or spaced for individual study or activity. Tables may be provided and perhaps give trainees increased feelings of togetherness and security. Chairs alone, or tables, can be used with equal success.

Bookshelves aid in the display of available materials and texts. Encourage students to handle and thumb through the books shown there. In a frequented area of the room a table of current magazines will stimulate reading for enjoyment. In the classroom where low shelves are built along a wall, magazines may be displayed across the top to add both interest and color. Trainees should be encouraged to "borrow" these magazines as they show interest in them.

A movable or rolling cart provides easy storage for equipment such as an overhead projector, slide projector, movie projector, and tape recorder. When such equipment is not in use, the cart easily can be rolled into space out of the mainstream of room traffic.

One of two bulletin boards for eye-catching displays are useful. Here may be posted cartoons, drawings, and pictures relative to occupational areas, or to community affairs. Though it is likely that only an occasional trainee will have magazines or newspapers in the home, encourage the clipping of pictures and articles for bulletin board display. A printed banner carrying "a chuckle for today" helps to lighten the mood of those reading it. Some trainees enjoy the personal expression involved in planning a bulletin board display pertinent to class work and activities.

A suggested room arrangement effective for Basic-Remedial Education follows: (see next page)



KEY

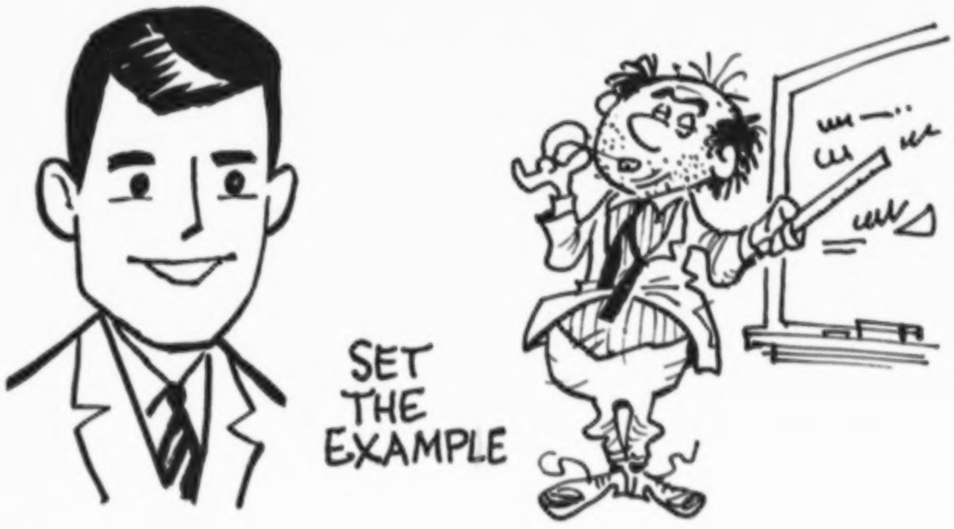
A. Waste basket
B. Chalk board
C. Bulletin board
D. Speaker stand
E. Student files
F. 4 Drawer file cabinet
G. 2 Door storage cabinet
H. Projection table
I. Tripod projection screen
J. Enrichment table
K. Seating table
L. Chairs

N. Controlled reader junior
O. Learning stations
P. Head sets
Q. Reading lamps
R. Tape recorder
S. Encyclopedia & dictionary truck
T. Pencil sharpener
U. Newspaper file
V. Screen

APPEARANCE OF THE INSTRUCTOR

Some may feel that consideration of the topic "Instructor Appearance" has little place in this handbook. However, any factor which may have beneficial or detrimental effect on the trainee should be discussed. This does not suggest that clothing be elaborate or expensive.

The male instructor has little opportunity for variety in dress. However, a neat suit, or informal sport outfit can be changed by a colored shirt or color-blended tie and pocket handkerchief. As a rule a sport shirt instead of a coat is more in keeping with the attire of the trainees. Generally speaking clothing of the woman teacher is noticed more and has more effect on students. Drab colors, the same dress day in and day out, a stringy hairdo, and poor grooming discourage the trainee. The bright red winter dress, and daffodil yellow spring dress of one teacher come to mind for each time she wore those dresses her students not only exclaimed with pleasure but learned more easily and happily.



Set a good example by following these tips on appearance.

1. Comb hair neatly and attractively.
2. Have regular haircuts. (men)
3. Keep fingernails cleaned and manicured.
4. Bathe regularly.
5. Wear clean clothes daily.
6. Keep shoes polished and mended (heels straight).
7. Avoid overuse of makeup.
8. Wear something different each day, or at least change a pin, earrings, or scarf to provide interest and accent.

An attractive appearance is one more factor in providing a desirable climate for learning, as well as setting a good example of the kind of impression needed for job employment.

INSTRUCTOR ATTITUDE

Widely accepted is the feeling that some instructors and students never develop empathy for each other. It seems true that the individual one instructor finds cooperative and well-motivated, another may find irritating and disinterested. In some the antipathy is so great as to be termed a personality clash. Certainly any attitudinal, behavioral, or personality collision should be avoided for it would serve only as further discouragement to individuals for whom this has been a way of life.

The Basic-Remedial Education instructor should observe and analyze trainee attitude to see what develops or works. What motivates one trainee, won't work with another. Keep trying.

Plan to shield the trainee from criticism, ridicule, or embarrassment. In the event an unfortunate word exchange occurs, plan with flexibility to provide a change of pace. At the same time allow for interpersonal exchange of thoughts and ideas to increase trainee feelings of self-worth and self-confidence. Make flexibility a key part of teacher attitude.

Appreciate the system of values used by the trainee and go along with them rather than fight them over their attitudes. Perhaps it is unwise to change all their values anyway for doing so could make them unacceptable at home and among former friends.

BE FLEXIBLE

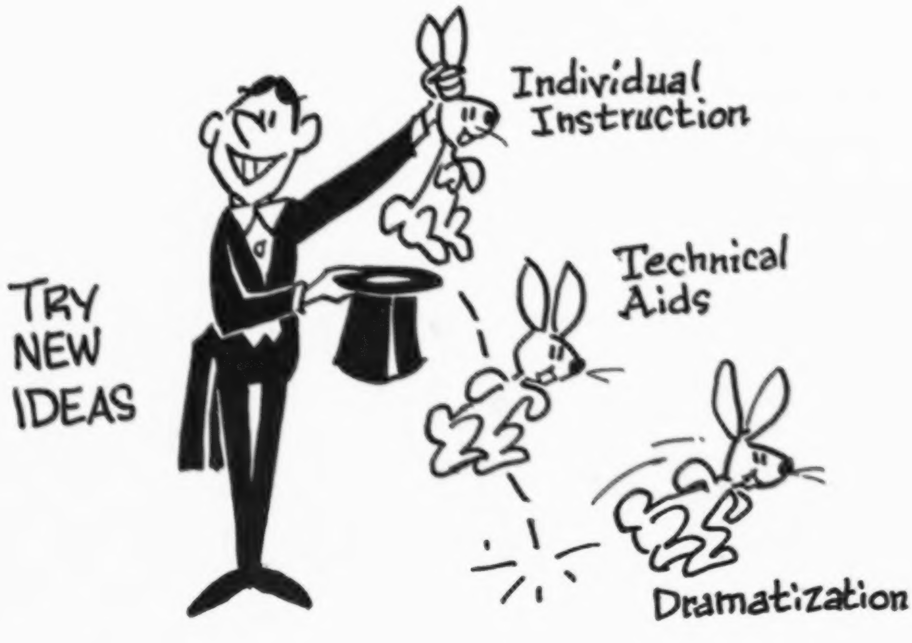
Most individuals from the lower socio-economic levels have done little planning ahead, adopting the attitude of living for today and letting tomorrow care for itself when it comes. The example and practice of planning with the trainee the classwork for tomorrow, and then later for several days hence, may help him begin some planning for himself.

If instructors of adult trainees are to succeed they need to be willing to try new ways of working with them. At times deviation from the usual may bother the teacher who develops guilt feelings for attempting a "far-out" procedure. There is no need to be conscious-stricken. Keep trying innovations. Some will be successful. Be sincere; be patient; and keep trying.

To assist the instructor develop a good climate for learning some "Tips for Teachers" follow:

Tips for MDT Teachers:

1. Quickly learn the names of the trainees and as much as possible about them.
2. Meet classes on time.
3. Accept the trainees as they are without prejudging them.
4. Speak slowly, clearly, and pleasantly.
5. Write or print legibly in large letters.
6. Make adjustments in classroom seating and activities for individuals with hearing, eye, or other physical problems.
7. Be sure all work is purposeful and not busy work.
8. Provide adequate drill and practice time in class.
9. Build class work around real-life situations.
10. Be businesslike and firm, but not gruff, harsh, or brusque in manner.
11. Plan teaching units short enough to give trainees a feeling of accomplishment and success.
12. Encourage each trainee to work at his own learning rate.
13. Encourage each trainee to work to his full potential.
14. Vary classwork to care for individual needs and differences.
15. Never hurry instruction, practice, or progress when manipulative skills are involved.
16. Identify trainee errors, but minimize criticism.
17. Praise any possible progress or success, however small.
18. Criticize in private; praise in public.
19. Make learning fun.
20. Avoid boredom.



21. Present ideas and classwork in an orderly way sequentially from the simple to the more difficult.
22. Avoid contradictions and arguments during instruction.
23. Avoid student detours, or getting off the subject unless the detour has application to the subject or occupational training.
24. Discourage ridicule by anyone.
25. Avoid sarcasm.
26. Avoid mannerisms which might irritate trainees.
27. Be friendly but dignified to maintain respect of the students.
28. Practice good housekeeping in the classroom since a neat, orderly room encourages orderly thinking.
29. Wear clean, neat, and appropriate clothing.
30. Practice good personal hygiene.
31. Admit errors; no one is perfect.
32. Learn to laugh at yourself and with others.
33. Encourage teamwork in class by pairing a rapid learner with one or more slow learners.
34. Maintain discipline firmly but pleasantly.
35. Keep class sessions informal.
36. Avoid use of the word "test"; trainees are allergic to tests as such.
37. Encourage students to want to learn.
38. Trainees learn what has personal meaning for them so use live materials applied to everyday situations in the school and community.
39. Be flexible; accept change; try innovations in materials, methods, procedures, and approach.
40. Let the trainee correct himself whenever possible.
41. Be prompt with compliments, and with corrections.
42. Remember that teaching aids cannot take the place of the teacher.
43. Remember that student activity and participation help prevent boredom.
44. Avoid making personal decisions for the students. Listen, ask questions to help find a solution to the problem, or if necessary refer them to the guidance supervisor or community agencies specializing in psychological problems.
45. Avoid emotional reaction to anything trainees may say; never show shock or surprise.
46. Don't be stuck behind your desk; move around the room giving help impartially to all.
47. Break class periods up into segments by varied activities and kinds of learning processes.
48. Avoid assigning homework.
49. Avoid talking down to trainees.
50. Remember to treat trainees as mature individuals.
51. Remember that trainees may be ill, fatigued, or even hungry when they enter the program.
52. Avoid use of tests (as such), shiny texts, and machines in the first week or two.

SUMMARY

The climate for learning is influenced both by physical surroundings and other conditioning factors. Progress in learning is irregular due to frustrations, distractions, fatigue, enthusiasm, attitudes, interest, and motivation. The positive incentive or reward of effort is the prospect of employment through development and improvement of skills in Basic-Remedial Education and in occupational training. However, since learning is affected by emotional, social, and psychological overtones, the instructor of necessity must recognize other factors to provide a good climate for learning.

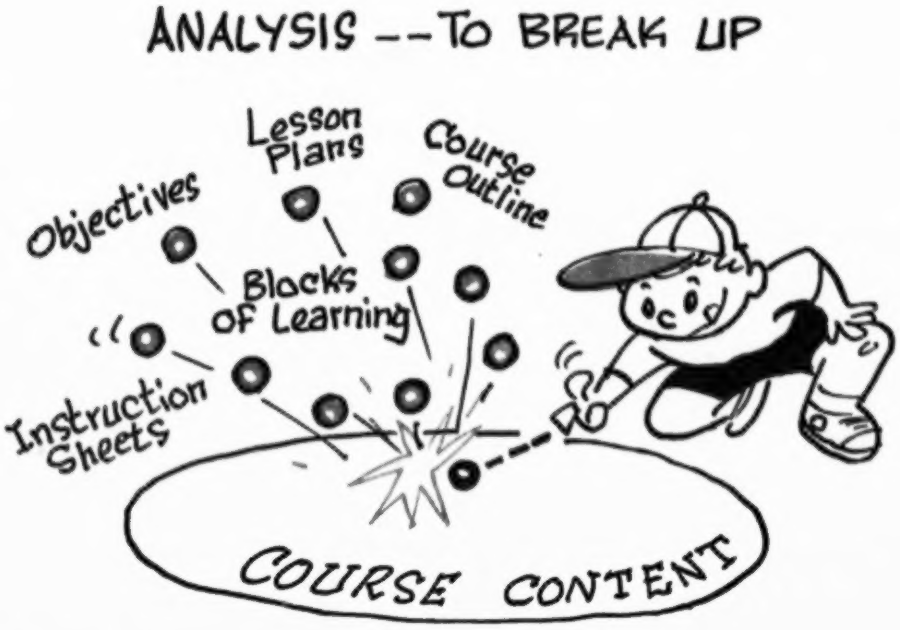
CHAPTER IV

PREPARING TO INSTRUCT

When the new instructor comes on duty the supervisor introduces fellow teachers and acquaints him with the training facility. After being briefed on rules and regulations as well as class assignments, course outlines, lesson plans, and other duties, he is free to explore the Basic-Remedial Education classroom and examine texts, equipment, and materials.

Following the initial survey the instructor's earliest concern is to prepare for the first days of classwork. To get an idea of course content, he should secure a copy of the MT-1 and of the course outline in the developed project, look over the outline of the course as taught by the previous teacher, or get the suggested State outline. He should familiarize himself thoroughly with the needs of the prospective students by conferring with the guidance and administrative personnel.

After the first overview of the total situation the next step is analysis of the course. Usually it is wise to write out this analysis in outline form. Now what does course analysis really mean?

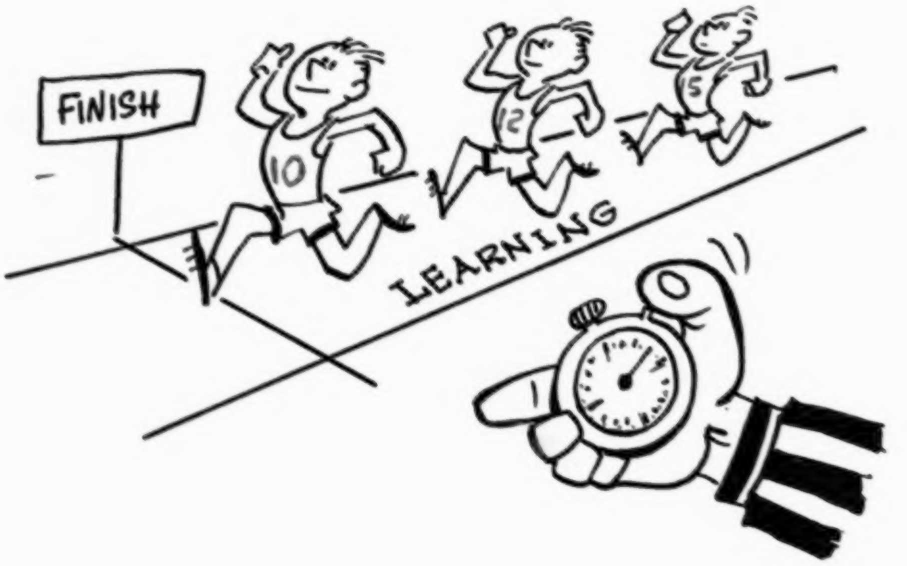


The word "analysis" comes from the Greek and means literally "to break up." It simply means to break the course into its component parts, or sections and units, for better understanding and organization of the content. The procedure includes setting up course objectives (Refer to Chapter I., Goals), outlining subject matter and arranging it in satisfactory sequence from the simple to the more difficult. All of this which should be in writing, plus lesson plans, references, film lists and other addendum, constitute a course of study.

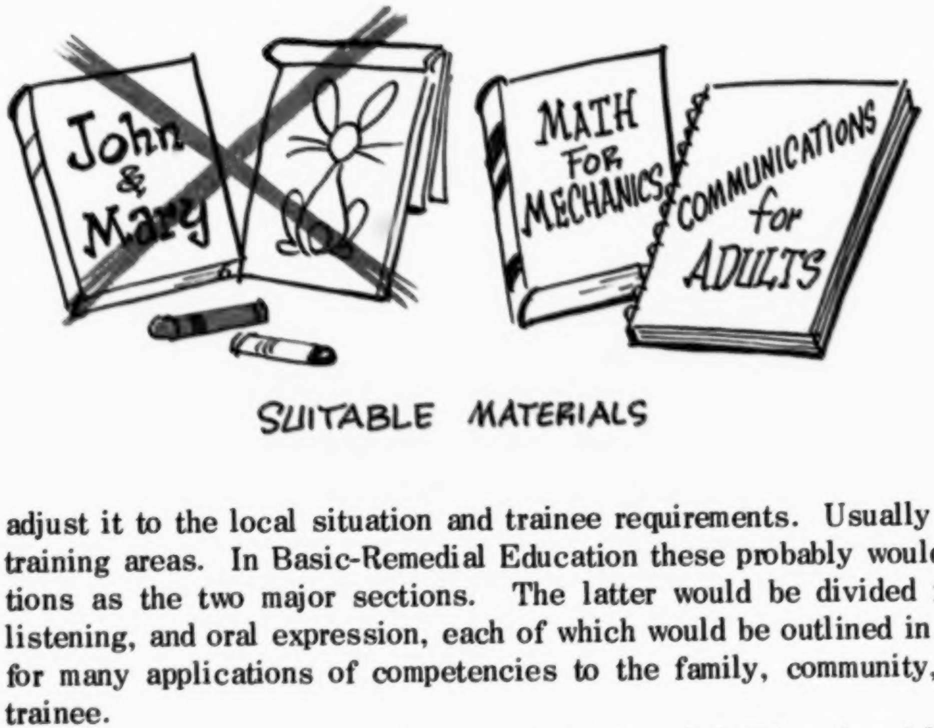
After completing the course outline the instructor should familiarize himself thoroughly with equipment, materials, visual aids, and references available for use, see that they are ready to use, and try them out to be well versed in the operational techniques. Then it is time to plan for instruction on the basis of the individual needs of the trainees. Though educators often talk about individual instruction, rarely is explanation made of what it is or how to plan for it. Let us consider this.

Basically, individual instruction involves (1) accepting the trainee on the level where he is; (2) planning to meet the particular needs of each student; and (3) implementing the plan. The first step in carrying out the plan is to set up in the instructor's notes, references and the order of the units of work building from section to section by following the course outline drafted earlier.

When setting up units or blocks of learning, plan class assignments with enough variations so both the slow and rapid learner can advance at his own progression rate from the point or level at which he arrives in class. Only occasionally could the Basic-Remedial Education class be taught as a group, due to the numerous variables in trainee background. However, some basic activities for all can be devised with careful planning and used briefly in each class period, or at least several times a week. The remainder of the time should be reserved for individual progression with each trainee working on his own level and at his own rate of speed. With this plan the instructor has greater opportunity to give each trainee individual attention and help as required or requested. Following this procedure answers the trainee's desire for attention and his very real need of help over the "rough spots" or portions of material for which he has little understanding or background. The many new programmed materials and systems of learning now available are invaluable for individual instruction when provided for the levels required.



Suitable materials will be discussed in some detail in a later chapter. However, a word of caution in regard to choice of materials. Avoid the "Mary" and "John" juvenile types for there is little challenge or interest therein for adult learners. Select materials oriented to everyday adult life, activities, and interests but on the several levels usually needed for learning purposes.



SUITABLE MATERIALS

THE COURSE OUTLINE

Since the course outline is vital to adequate progression probably it is wise to consider it in further detail. A general outline may be obtained but most instructors prefer to amplify and adjust it to the local situation and trainee requirements. Usually a course outline is divided into major training areas. In Basic-Remedial Education these probably would include mathematics and communications as the two major sections. The latter would be divided further into reading, writing, spelling, listening, and oral expression, each of which would be outlined in some detail. Planning should provide for many applications of competencies to the family, community, and occupational involvement of the trainee.

A suggested course outline for Basic-Remedial Education follows on the next few pages. Before studying it, however, all should understand that topics are listed with a view to bringing to mind content which should be included. This does not imply, however, that the sequence of topics must be followed exactly. Certainly, instructors will be expected to vary in individual use of the outline according to the needs of their trainees. Too there is considerable overlapping of content. Some topics listed under reading may also be studied in oral expression, listening, and in writing. Others may be taught both in math and in writing. The instructor should not worry about such overlapping of content for desirable overlearning occurs as a result of reinforcement through repetition and repetitive applications.

SUGGESTED COURSE OUTLINE
FOR
BASIC-REMEDIAL EDUCATION

PREFACE

The outline for Basic-Remedial Education was planned on the premise that in Math and Communications programs the trainee would acquire skills and understanding needed to participate effectively in the world of work. Progressive planning of outlined topics includes not only math and communications but also applications of these areas to occupational training and everyday life situations plus knowledge and appreciation of the need for training in social competencies.

It should be pointed out that the format of Section II and III varies, and purposely, to show two ways of structuring an outline for subject areas. Section II, Mathematics, is written on the three instructional levels used in MDTA Basic-Remedial Education programs. Though Section III, Communications, could have been written in that format it seemed wise to illustrate a factual type of outline also. Here one unit each is devoted to reading, writing, oral communications, and spelling, with the outline written sequentially in topic form. This material could have been outlined just as easily on three levels if that would prove more useful to the individual instructor. It is hoped that this change of format will not be confusing but will illustrate the variations in outlining style which could be used.

Some consideration should be given at this point in regard to the levels used in Unit II. In MDTA projects most Basic-Remedial Education instructors group on three levels: Beginning, Intermediate, and Advanced. Beginning as used here represents grade 0-3; Intermediate, grades 4-6; and Advanced, grades 7 and above.

Sometimes a fourth, or developmental level is used. Future personal development is implied in this Basic-Remedial Education outline. Certainly all trainees should be helped to understand that learning continues throughout life. It may be planned or unplanned, in school, or accomplished on an individual basis through self-study.

Unless the trainee realizes the need for Basic-Remedial Education he may be rebellious to find himself enrolled in what he thinks are classes resembling some of those he disliked in public school. Thus, it is important to develop his interest in math and communications and what they can do for him.

Nearly all occupations today require some skill in mathematics. The waitress must be able to compute the total bill of the patron at her table; the millman must be able to measure accurately and use fractions in sixteenths, thirty-seconds, and sixty-fourths; the electronics mechanic must use applications of higher mathematical theories; the machinist must apply formulae to tolerances for screw thread standards, taper, gear ratios, etc.; and the upholsterer must be able to measure fabric areas and establish job estimates. These are only a few examples of job skills requiring computational facility. Skill in various phases of communications is of equal value. Applications to job training help the trainee understand the need for this study.

Though it is thought that the suggested outline is reasonably complete and is in a desirable sequence, yet the instructor should feel free to use it flexibly and to adjust it to suit the local situation.

SECTION I

ORIENTATION

This section of the outline should be presented, not as written for the instructor's information, but in a practical interesting manner in line with trainee interests and background. Covering this content in a vivid manner encourages early participation by trainees and is a means of getting acquainted. To provoke discussion ask questions such as: Where did you work before coming here to school? What do you want from life? Why do some people get along well with others? How far do you drive to school? What kinds of jobs are you qualified to fill now without further training? Discussion of these or similar questions can set a desirable climate for learning.

UNIT 1. RULES AND REGULATIONS

OBJECTIVE:

To develop understanding of program regulations

- I. Rules and regulations
  - A. Training facility rules
    - 1. Opening and closing hours
    - 2. Breaks
    - 3. Lunch hour
    - 4. Smoking (allowed or not; where, if allowed)
    - 5. Length of course
    - 6. Absences
    - 7. Illness
    - 8. Time clock
  - B. Class procedures
    - 1. Books
    - 2. Notebooks
    - 3. Equipment
- II. Trainee behavior
  - A. Attendance
  - B. Punctuality (related to job holding)
  - C. Learning
    - 1. How to study
    - 2. Where and when to study
    - 3. On basis of individual progression
  - D. Cooperation
  - E. Personal hygiene and dress
  - F. Conduct
  - G. Personal responsibilities in class
    - 1. Work and study habits
    - 2. Care of class supplies and equipment

UNIT 2. INTRODUCTORY MATERIAL

OBJECTIVES:

To develop understanding of the need for Basic-Remedial Education

To develop understanding of course objectives and content

To develop appreciation of Basic-Remedial Education as it is involved in the life of the trainee

To develop understanding of present personal competency in Basic-Remedial Education

I. Need for Basic Education
    A. Specifics in relation to occupational involvement of trainees
        1. Mathematics
            a. And the machinist
            b. And the upholsterer
            c. And the commercial cook
            d. And the waiter (waitress)
            e. And the millman
            f. And the woodworking machine operator
            g. And the draftsman
            h. And the farmer general trainee
            i. And the welder
            j. And the gas engine repairman
            k. And the automobile mechanic
            l. And the service station attendant
            m. And the sheet metal worker
            n. And the auto body repairman
            o. In business occupations
            p. In other occupations
        2. Communications
            a. Value in everyday life, in class, and at home
            b. Related to job application
            c. Related to holding a job
            d. Value in trainee community participation
    B. Trainee listing of needs for personal occupational competency (entry)
II. Discussion of course objectives
    A. General objectives
    B. Specific objectives
III. Course content
    A. Survey (for interest)
    B. Trainee discussion and questions
    Consideration of areas for further study
        Content related to everyday life of trainee
        1. Home and family
        2. Social
        3. Cultural
        4. Community
        5. Citizenship

- B. Interrelationships
  - 1. With peers
  - 2. With family
  - 3. Teacher-trainee relations
  - 4. Employer-employee relations
  - 5. On-the-job relationships
- C. Leadership applications
  - 1. In class
  - 2. On the job
  - 3. In the community

V. Trainee inventory of personal ability from
- A. Educational background
- B. Job experience
- C. Other

SECTION II

MATHEMATICS

UNIT 1. BEGINNING LEVEL (GRADES 0-3)

OBJECTIVE:

To develop basic skill and understanding of mathematics as part of everyday life.

- I. Number symbols
  - A. Writing symbols
  - B. 1 to 10
- II. Measurements
  - A. Reading of rule to 1/16"
  - B. Practice for occupational training purposes
- III. Rational number system
  - A. Simple concepts
  - B. Simple applications (job oriented)
- IV. Simple math vocabulary
  - A. Add (more; plus)
  - B. Subtract (less; take away)
- V. Learning procedures of addition and subtraction
  - A. Through use of math models
  - B. Through use of money (pennies)
  - C. Practice
    - 1. Manual
    - 2. Mental
- VI. Math applications
  - A. Number location of houses on a street
  - B. Distance in miles between towns
  - C. Speed (automobile)
  - D. Passage of time (hours of the day)
  - E. Volume (pint, quart, gallon)
  - F. Size
  - G. Fraction conceptualization (1/2 mile; 3/4 lb.; 1/4 off; half-price)
  - H. Overtime (time and a half)
  - I. Percent (applied to time purchase and loans)
  - J. Taxes (sales; withholding, income)
  - K. Insurance (workmen's compensation; personal; property)
  - L. Banking and banking procedures
    - 1. Checking account
      - a. Writing checks
      - b. Making deposits
    - 2. Savings

UNIT 2. INTERMEDIATE LEVEL (GRADES 4-6)

OBJECTIVE:

To develop computational ability sufficient for everyday living

- I. Number symbols
  - A. Writing of number symbols
  - B. Counting to hundred thousand (used in inventory, factory shipping and mailing rooms)
- II. Addition and subtraction facts and applications
  - A. Tens, hundreds, and thousands
  - B. Written practice of dollars and cents
  - C. Written practice with measures
    - 1. Feet, inches, yards, miles
    - 2. Minutes, seconds, hours, days, weeks, years
    - 3. Pints, quarts, gallons
  - D. Addition and subtraction of like fractions
  - E. Simple one-step word problems oriented to
    - 1. Everyday purchases
    - 2. Job training
- III. Multiplication
  - A. Simple demonstration with sticks or blocks
  - B. Basic tables (drill and/or practice with stick or block)
  - C. Multiplication of one and two place numbers by one and two place multipliers
  - D. Multiplication of dollars and cents by one and two place multipliers
  - E. Vocabulary (multiplier, product, etc.)
  - F. Simple word problems related to everyday life of trainee or occupational training
- IV. Division
  - A. Basic facts of division (tables)
  - B. Practice division of one and two place dividends by one and two place divisors.
  - C. Practical division problems (dividing dollars and cents by one and two place divisors, etc.)
  - D. Vocabulary (divisor, dividend, quotient, remainder)
  - E. One step word problems oriented to
    - 1. Everyday trainee life
    - 2. Occupational training
- V. Fractions
  - A. Addition and subtraction of like fractions
    - 1. Without reducing to lowest terms
    - 2. With reducing to lowest terms
  - B. Adding and subtracting mixed numbers
  - C. Simple problems of adding and subtracting mixed numbers
  - D. Multiplication of fractions
  - E. Division of fractions
- VI. Math and the trainee
  - A. Budgeting (basic and simple)
    - 1. Time
    - 2. Income
  - B. Money management
  - C. Price and value related to purchases
  - D. Installment buying
  - E. Time related to time clock, work day, and earnings
  - F. Taxes (income, withholding, and other)

UNIT 3. ADVANCED LEVEL (GRADE 7 AND ABOVE)

OBJECTIVE:

To develop computational ability to enable trainees to function adequately in everyday life and in job situations

I. Review and reinforcement of understanding, procedures, skills, and applications of Beginning level
II. Enlargement of skills (to include 3 and 4 place number multipliers and divisors, and unlike fractions)
III. Decimals
    A. Reading and writing of decimals
    B. Fractions and decimals
        1. Relationship
        2. How to change from one to other
    C. Addition of decimals
    D. Subtraction of decimals
    E. Multiplication of decimals
    F. Division of decimals
IV. Percentage
    A. Reading and writing percents
    B. Percent, decimals, and fractions
        1. Relationship
        2. How to interchange
    C. How to determine percentage of one number to another
    D. Use of percents above 100
    E. Use of percents less than 1
    F. Simple shortcuts in percentage
    G. How to determine a number from a given percent
V. Ratio and proportion
VI. Math applications
    A. To trainee life
        1. Personal money management
            a. Banking
            b. Loans
            c. Budgeting
        2. Consumer education and protection
            a. Laws and standards
            b. Better Business Bureau
            c. Buying (needs vs. wants)
            d. Types of stores (chain; discount; mail order)
        3. Taxes
            a. Sales
            b. Luxury
            c. Gasoline
            d. Cigarette
            e. Liquor
        4. Credit
            a. Definition, analysis, and value
            b. How to establish
            c. Advantages

        - d. Kinds
            - (1) Open account
            - (2) Installment
            - (3) Service credit
        - e. Requirements for good credit rating
- B. To tools and machines
    - 1. Caliper
    - 2. Micrometer
    - 3. Gauge
    - 4. Machining tolerances

SECTION III

COMMUNICATIONS

Communications is the study of the process whereby meanings are exchanged between individuals, or ideas are expressed in speech or writing. The ability to communicate effectively is an important factor in becoming employed, in being able to hold a job, or in occupational advancement.

Communications as tne term is used in MDTA projects includes the study of reading, writing, spelling, and oral communications, and applications of each. One unit of Section III is devoted to each of these areas of Communications.

UNIT 1. WRITING

OBJECTIVE:

To develop the ability to write legibly in both manuscript and cursive styles

- I. Mechanics of writing
    - A. Manuscript writing
        - 1. Letters
            - a. Circle
            - b. Line
            - c. Combination circle and line
            - d. Capital and small
        - 2. Numbers
        - 3. Practice
            - a. For forms (applications and tax)
            - b. For legibility
            - c. For improved speed
    - B. Cursive writing
        - 1. Letter formation, placement, and spacing
            - a. Small
            - b. Capital
        - 2. Cursive or manuscript (when to use)
        - 3. Practice
            - a. For legibility
            - b. For ease and speed of writing
    - C. Sentence formation
        - 1. Expression of complete thoughts
        - 2. Capitalization
            - a. First word of a sentence
            - b. Names
                - (1) People
                - (2) Streets and towns
                - (3) Geographic areas
        - 3. Simple punctuation
        - 4. Abbreviations (Mr., Mrs., St., Ave., State)
    - D. Paragraph formation
        - 1. Structure
            - a. Topic sentence
            - b. Development from topic sentence

        - 2. Sequential paragraphs
        - 3. Unity of thought
- II. Application of writing skills
    - A. Forms
        - 1. Job application
        - 2. Resume of job qualifications
        - 3. Tax forms (W-2)
        - 4. Pay forms
        - 5. Application for charge account and loans
    - B. Summaries
    - C. Letters, notes, and cards
        - 1. Personal letters
        - 2. Business letters
        - 3. Notes to milkman, paperboy, mailman
        - 4. Addressing envelopes
        - 5. Addressing and writing postcards
    - D. Creative writing

UNIT 2. READING

OBJECTIVE:

To develop the ability to read and comprehend that which is written

- I. Word recognition
  - A. Picture identification of words
    - 1. Through recognition of similar and dissimilar initial sounds
    - 2. Through sound and letter relationship
    - 3. Through theme and action clues
  - B. Phonetic analysis of words
    - 1. Initial sounds
    - 2. Final sounds
    - 3. Rhyming words
    - 4. Vowel sounds
    - 5. Blends
    - 6. Digraphs
  - C. Structural analysis of words
    - 1. Root forms
    - 2. Prefixes and suffixes
    - 3. Syllables
    - 4. Endings or inflectional forms
    - 5. Compound words
    - 6. Contractions
    - 7. Possessives
  - D. Context clues
- II. Vocabulary building
  - A. Building a sight vocabulary
  - B. Recognizing and using synonyms, antonyms, and homonyms
  - C. Recognizing and using words needed in the adult world
  - D. Recognizing and using trade terms
- III. Comprehension
  - A. Associating meaning with the printed word
    - 1. On the word level
    - 2. On the sentence level
    - 3. On the paragraph level
    - 4. On the story and/or chapter level
  - B. Determining the main idea of material read
  - C. Reading for detailed information
    - 1. Facts
    - 2. Directions
    - 3. Inferences
    - 4. Sequence of events
  - D. Increasing reading speed and comprehension
  - E. Drawing conclusions
  - F. Solving problems
- IV. Practical applications
  - A. Occupational reading
    - 1. Want ads
    - 2. Use of telephone directory

    3. Use of yellow pages in telephone directory
    4. Notice of sales (property, clothing, food)
    5. Street and road signs
    6. Menus
    7. Driving language (sufficient for operator's license)
    8. Machine operation procedures
    9. Trade terminology
    10. Job applications
    11. Safety

B. Personal reading
    1. Grocery and drugstore signs, labels, and brands
    2. Recipes
    3. Personal improvement
        a. Manners
        b. Hygiene
        c. Child care and development
        d. First aid
    4. Road and city maps
    5. Building names
    6. Contracts, notes, and liens (fine print)
    7. Newspaper, magazines, and other recreational reading.
    8. Car care and upkeep
    9. Reference materials (almanac, dictionary, encyclopedia)
    10. Mail order catalogs

UNIT 3. SPELLING

OBJECTIVE:

To develop the ability to spell correctly those words needed for everyday life activities and occupational training

- I. Basic graded word lists (both teacher made and commercial)
  - A. Uses
    - 1. Flash card recognition
    - 2. Workbook correlation
    - 3. Sentence building game
  - B. Evaluation through
    - 1. Recognition
      - a. As spoken
      - b. As reflected by Tach-X
      - c. In reading
      - d. As dictated
    - 2. Usage
    - 3. Ability to reproduce the words
- II. Phonetic analysis
  - A. Basic word families
    - 1. Sound substitution
      - a. Through initial sound
        - (1) Consonant
        - (2) Consonant blend
      - b. Through final sound
        - (1) Consonant
        - (2) Consonant blend
    - 2. Uses
      - a. Flash card recognition (phonetic word drill cards)
      - b. Workbook correlation
    - 3. Evaluation through
      - a. Recognition
      - b. Usage
      - c. Ability to produce words
  - B. Vowel study
    - 1. Long vowel sounds
    - 2. Short vowel sounds
    - 3. Vowel digraphs
    - 4. Silent vowels
    - 5. Diphthongs
  - C. Sound irregularities
    - 1. Silent consonants
    - 2. Non-phonic groups (ough, augh)
  - D. Syllabication
    - 1. Rules (in depth required for occupational use)
    - 2. Practice
- III. Trade or shop terms

UNIT 4. ORAL COMMUNICATION

OBJECTIVES:

To develop ability to speak clearly and effectively

To develop ability to listen and evaluate what is heard

- I. Speaking
  - A. The voice
    - 1. Modulation
    - 2. Pitch
    - 3. Projection
  - B. Articulation and pronunciation
    - 1. Group drills
    - 2. Individual drills
  - C. Speech patterns
    - 1. Idioms
    - 2. Colloquialisms
    - 3. Dialects
    - 4. Geographic variations
    - 5. Foreign language
    - 6. Word choice
    - 7. Mannerisms
  - D. Expression
    - 1. Sequential organization of material
      - a. Opening
      - b. Development of idea
      - c. Summary or closing
    - 2. Selectivity of content
      - a. Facts
      - b. Words
      - c. Appropriateness
  - E. Applications of speaking
    - 1. Greetings
    - 2. Personal identifications
    - 3. Conversation
    - 4. Introductions
    - 5. Requesting and giving directions and information
    - 6. Planned talks and recordings
    - 7. Informal group discussions
    - 8. Job inquiry and interview
    - 9. Telephone usage
      - a. Personal use
      - b. Business use
      - c. Emergency (police, fire, ambulance)
    - 10. Social contacts
    - 11. Consumer contacts
      - a. Making purchases
      - b. Hunting an apartment or house
      - c. Sales approach

12. Telling about movies
13. Telling about TV programs
14. Telling about field trips
15. Describing objects

II. Listening
  A. For sound variations
    1. Sound alikes
    2. Dissimilar sounds
    3. Inflection
  B. For information
    1. Facts
    2. Directions
    3. Ideas
  C. For comprehension
    1. Assimilation
    2. Utilization in live situations
  D. For safety
    1. Bells
    2. Sirens (fire, police, ambulance)
    3. Whistles (factory; police)
  E. For pleasure and fun
    1. Singing
    2. Records
    3. Concerts
    4. Plays
    5. Sounds in nature
    6. Jokes and anecdotes
  F. Applications of listening
    1. Following verbal directions
    2. Taking notes
    3. Recognizing acceptable speech patterns
    4. Identifying dialects
    5. Identifying speaker's point of view
    6. Identifying main idea
    7. Identifying emotionally charged expressions

SECTION V

SOCIAL COMPETENCIES

That the trainee may emerge as an acceptable individual, attention must be focused on areas of improvement beyond Basic-Remedial Education and occupational training. Development of needed social awareness is the responsibility of every instructor. The communications teacher probably has the best opportunity to concentrate on this aspect of development through supplemental reading, oral presentations, class and panel discussions. As a result attitudinal and behavioral improvement advance trainee status in the community.

Some selected topics to encourage improvement in social competencies are included in this section of the outline. However, of necessity many of these topics will be included in math and communications lessons as applications. Interest developed through this material may provide additional subjects for study.

UNIT 1. PERSONAL DEVELOPMENT

OBJECTIVE:

To develop an understanding of the need for personal development through social awareness

- I. Development of self-awareness
  - A. Through personality improvement
    - 1. Self-knowledge and acceptance
    - 2. Self-esteem
    - 3. Acceptance and tolerance of others
    - 4. Respect for others
  - B. Through health and hygiene
    - 1. Hygiene
      - a. Teeth
      - b. Hair
      - c. Nails
      - d. Body
      - e. Clothing
    - 2. Health habits
      - a. Exercise
      - b. Rest
      - c. Diet
      - d. Posture
  - C. Through personal appearance
    - 1. Neatness
    - 2. Appropriate dress
    - 3. Fit of clothing
    - 4. Grooming
  - D. Through behavior
    - 1. Manners
    - 2. Attitudes manifested through
      - a. Dependability
      - b. Punctuality
      - c. Cooperation
      - d. Disposition

II. Development of community awareness
  - A. Citizenship
    - 1. Registration and voting
    - 2. Recognition and obedience of laws
    - 3. Respect for authority
      - a. Police and highway patrol
      - b. Courts
    - 4. Respect for property
  - B. Government
    - 1. Structure
    - 2. Governing bodies
    - 3. History
  - C. Community identification
    - 1. Streets and thoroughfares
    - 2. Historical sites
    - 3. Landmarks
    - 4. Transportation centers
    - 5. Service agencies
      - a. Fire, police
      - b. Health
      - c. Education
      - d. Welfare
    - 6. Parks and other recreation areas

UNIT 2. SOCIO-ECONOMIC DEVELOPMENT

OBJECTIVE:

To develop understanding of the relationship between the job and family advancement

I. Factors affecting employment
  A. The job
    1. Training
    2. Employer-employee relationships
    3. Labor
      a. Unions
      b. Dues
      c. Non-union labor
    4. Job attitudes and satisfactions
    5. Advancement expectations
  B. Income from job
    1. Minimum wage
    2. Wage range
    3. Anticipated wage progression
II. Factors affecting the trainee family
  A. Employment and family status
    1. Satisfactory housing
    2. Improved diet and dietary habits
    3. Schooling for children
    4. Satisfactory clothing
    5. Social activities
    6. Church and community activities
    7. Recreational activities
    8. Leisure time
    9. Vacation and touring
    10. Use and protection of public and private property
  B. Management
    1. Of time
    2. Of money
      a. Budgets
      b. Needs vs. wants
      c. Savings
      d. Loans
    3. Through decision-making
    4. Retirement
  C. Cultural advantages
    1. Development through additional education
    2. Development through leisure time activities
      a. Reading
      b. Travel
      c. Local cultural opportunities
        (1) Art galleries
        (2) Concerts
        (3) Museums
        (4) Botanical gardens
        (5) Other

LESSON PLANS

The successful individual has a plan of action which may plot among other things a business future, educational plans, or a plan for financial security in retirement years. The successful teacher also has a plan for action—the lesson plan. The lesson plan is a program for action or the orderly procedure for teaching a lesson efficiently. A series of consecutive plans provide a continuous story of progress through the course content.

To be effective, the lesson plan need not be written in minute detail, but should be complete and practical. Usually it would be no more than a couple of pages in length though it may be shorter. Essentially it is a series of notes or notations made by the instructor for his own use and for the express purpose of guiding him progressively through the instructional period. It serves him personally, and should be usable by him though not necessarily usable by another instructor. In other words the lesson plan is essentially a personal guide. The plan may be written in topic or in sentence form, but should be brief, concise, and with every word important to sequential teaching of the content. Before writing a plan the instructor should think through the lesson in order to provide for situations which may arise, and in order to include all parts.

The lesson plan usually includes: (1) title; (2) objective, aim, and purpose; (3) time required; (4) methods and procedures; (5) correlation with prior learning; (6) special teaching points in presentation of new material; (7) instructional aids; (8) questions for check-up and review; (9) special words, terms or definitions; and (10) assignment and references. New material should be arranged in learning order using a few clear steps, for complex procedures confuse the trainee and cause him to lose interest. "Learning order" as used in the previous sentence refers to progression from the simple to the more complex tasks. These may be organized for either individual or group instruction.

The lesson plan has certain distinct advantages. It affords a ready form of reference to enable the teacher who is interrupted or side-tracked to return without delay to the point under consideration. It prevents neglect of important facts in the course of the instructional period. In addition it gives the instructor a feeling of self-confidence he derives in no other way.

Through the lesson plan the teacher manages the class so he can see and know what is taking place. Thus, he gains freedom and time to supervise student performance and progress.

The instructional portion of the lesson plan which provides these advantages to the instructor consists of four teaching steps: (1) Preparation; (2) Presentation; (3) Application; and (4) Testing. Presupposed, however, is adequate study by the instructor who has taken time to gather material and equipment, and to understand information to be taught.

LITTER BARREL

PREPARATION

PRESENTATION

Preparation refers to bringing the trainee to a state of readiness so that learning will be easier and more willingly accepted. In this phase of instruction the instructor states what he will teach, and attempts to motivate the student to arouse his interest. He may accomplish this purpose by explaining the need for the information, by stressing applications of the facts, by a vivid dramatic approach, or through an amusing but

TESTING

APPLICATION

applicable anecdote.

Presentation, the second step, receives its name from the fact that here the instructor sets forth or offers the new information or skill. In the case of a new computational procedure in math, the instructor may first tell how it is carried out, then show or demonstrate the procedure.

Application, the third step, should be used to allow the trainee to follow through on the instruction to determine if he can apply the knowledge which was presented for his consideration. This doing by the trainee is the first means of evaluating the effectiveness of the Preparation and Presentation steps. Follow through more than one time and in more than one way to reinforce initial learning.

Testing, the fourth step, perhaps might better be called by another name, at least as far as the trainee is concerned. Suffice it to say, however, that this step is a means of evaluating the extent of learning by oral and written means, through performance, or through some other means of analysis or diagnosis.

These four steps should be used to provide effective teaching of any new phase of study regardless of whether it is a skill or new information.

Some sample lesson plans may be observed on the following pages.

SAMPLE LESSON PLANS

for

BASIC-REMEDIAL EDUCATION

Date: April 28

LESSON PLAN

MATHEMATICS

Unit 5
Lesson 3

SUBJECT: Carrying in two column addition

PURPOSE: To learn to carry the numeral in the right or ones column in a two digit sum over to the left or tens column.

MATERIALS:
Place value board
Lunch room tickets
Working With Numbers Book 5
Temac section I
4 Math Mates
Filmstrips: MLAR #6 ARFX #4
MLAR #7 ARFX #5
ARFX #6

REFERENCES:
Figure It Out, Book I, page 9
Working With Numbers, Book 5, page 6
Temac section I, pages 50-55

I. Preparation (of the learner)

Could you find the cost of your lunch if you had a 29¢ cheeseburger and a 15¢ large coke?

Today we will learn how to add two column numerals - like 29 + 15.

In addition, often the sum of the digits in the right or ones column is 10 or greater. We cannot put down both digits in the ones column, so we must "carry."

Let's see if we can find the cost of this lunch and learn how to carry in addition.

II. Presentation (of the information)

Steps in two column addition	Things to remember to do or say
1. When the sum of the ones column is more than 9, the tens part of that sum must be carried over to the tens column.	1. Refer to tens and ones board for review of place value.

1 2. .29 In this problem first add the numerals + .15 in the ones column: 9 + 5 = 14 Write the 4 under the ones column and carry the one over to the tens column.	2. Discuss meaning of 14 - one ten and four ones.
3. .29 Add the 1 carried over to the other + .15 numerals in the tens column. .44 1 + 2 + 1 = 4	3. Show that the numeral carried to the tens column may be written lightly above the other numerals in the tens column.
4. .29 The sum is 44. The cost of a 29¢ cheese- .15 burger and a 15¢ coke is 44¢. .44	4. Remind trainee that these steps are followed in adding any groups.
	5. Have available old lunch tickets
	6. Remind trainee that when working money problems, the symbols indicating dollars or cents must be used.

III. APPLICATION

1. Give each trainee a sample lunchroom ticket, involving two items, and ask him to find the total cost.
2. Work with the individual trainee to see that he understands why and how to carry in addition.
3. Question trainee on steps followed in carrying and on key points of place value.

IV. EVALUATION

1. Assign exercises 2, 3, 4 on page 6, Working With Numbers, Book 5
2. Ask each trainee to use the Math Mate for viewing one of the following filmstrips:

   MLAR #6
   MLAR #7

   ARFX #4
   ARFX #5
   ARFX #6

3. Complete written test
   Temac Book I Review Exercise 5, page 55.

Suggested reference for trainee: Temac, Section I pages 50 - 54.

LESSON PLAN

LISTENING

SUBJECT: How to apply the T Q L R Formula of Listening (Tune-in, Question, Listen, and Review)

AIM: To develop the ability to employ the techniques of listening by using the T Q L R Formula for better listening habits.

TEACHING AIDS: Tape Recorder, Prepared tapes, Headsets

MATERIALS: Student Record Books, pencils

REFERENCES: S R A Teacher's Handbook pages 30 - 31

I. Preparation (of learner)

In daily living we depend upon listening as well as other media of communications. There are definite listening skills just as there are definite reading skills. Developing better listening skills in the classroom will make you a better listener on your job.

II. Presentation (of information)

Today we will use a listening formula T Q L R (Tune-In, Question, Listen, and Review). The S R A Listening Skill Builder program will help you learn to listen more effectively. Listen carefully as I read Listening Skill Builder #1. When I've finished reading the selection you will complete a comprehension check to find out how well you listened.

III. Application (Practice by learner)

The instructor will read Listening Skill Builder #1. (This material can be taped)

IV. Test (Comprehension)

Each trainee will complete a comprehension check to find out how well he listened.

LESSON PLAN

ORAL COMMUNICATIONS

SUBJECT: Improving Oral Communications through "Password"

AIM: To promote learning through friendly competition and fun

TEACHING AIDS: Chalk board

MATERIALS: Timer, pre-selected words

REFERENCES: None

I. Preparation (of learner)

A. Announce Game--Password
B. Today we will use the pre-selected words that were given to us by your shop instructor.

II. Presentation (of information)

We will divide our group into two teams. We will have one clue giver who will show the "password" to each captain who will in turn give clues to his team. Each player will have five seconds to give his answer. The first team to score twenty-five points is the winner.

III. Application

(Playing the "Password" game)

IV. Test

Have the trainee learn to spell the words used in the game by flashing them on the tachistoscope.

Note: (Shop vernacular has been placed on the write-on filmstrips)

LESSON PLAN

SPELLING

SUBJECT: Basic sight words

AIM: To develop the ability to spell basic sight words

TEACHING AIDS: None

MATERIALS: Graded spelling list, pencil, paper

REFERENCES: None

I. Preparation (of learner)

You have learned to read many new words this past week. Some of these words will reappear often as you read more. These same words are the ones that you will use in things you yourself write. Though you do not need to know how to spell every word you can read, you do need to be able to spell words you read and write frequently.

II. Presentation (of information)

Review each word from spelling lesson with the trainees

me
in
my
can
an
do
man
on
and
we

Remember to:

1. Call attention to initial sound similarities between "me," "my," and "man."
2. Show how "man," "can," and "and" are built from "an"
3. Emphasize similarity of ending sound in "on," "an," and "in"; "we," and "me."

III. Application

A. Call out each word for trainee to write
B. Correct each word with trainee
C. Use flash cards to evaluate recognition

IV. Test

Have trainee write the words again the following day.

LESSON PLAN

WRITING

SUBJECT: Letters of application

AIM: To develop the ability to write good letters of application

TEACHING AIDS: Model Letters of application

MATERIALS: Pens, paper

REFERENCES: English Language Arts, by Joseph Bellafire
Write Your Own Letters, by Rosenfeld and Cass
The Job in Your Future

I. Preparation (of learner)

Do you know what Adam said to Eve when she offered him the apple in the Garden of Eden? Do you know what Jonah said while inside the whale? We do not because their words were not in writing. Abraham Lincoln in his speech at Gettysburg said, "Government of the people, by the people, and for the people shall not perish from the earth." So we can see that speech is important, but writing is more enduring.

II. Presentation (of information)

The letter of application should be clear, brief, accurate, and courteous. The message counts most. In applying for the position, give your age, education, experience, references, salary desired, and request for an interview. Remember that the letter represents you and should be very neat.

III. Application and Test

A. Have trainees review qualities of a good letter of application.

B. Have trainees write a letter of application.

LESSON PLAN

READING

(Early Intermediate Level)

SUBJECT: Introduction to SQ3R (Survey, Question, Read, Review, and Recite)

AIM: To develop the ability to read with greater comprehension

TEACHING AIDS: Poster illustrating SQ3R method

MATERIALS: SRA Reading Lab; student Record Book; pencil

REFERENCES: SRA Teachers' Manual

I. Preparation (of learner)

No matter how well we read, we always want to read better. Just as we follow a recipe in making a cake or a formula to mix chemicals, so do we follow a formula for achieving greater reading comprehension.

II. Presentation (of information)

Today we are going to explore a new method of approaching unfamiliar reading material. We will follow a guide or formula known as the SQ3R method.

The first thing we do is make a quick Survey of the material; that's the "S" in SQ3R. To survey, we look at the pictures, read the title, the first paragraph, and the last paragraph. We also let our eyes skim the material for key words and phrases.

After the survey, we will probably have questions about the reading selection. At this point we won't have the answers, but the "Q" or questions will be step 2 of the formula. These questions will give us things to search for as we read.

Next comes the 3R's. The first of these is "Read"–read as carefully as possible.

After reading we need to review what we have read. "Review" then, will be the second of the 3 R's. There are many ways a person can review. You may want to close your eyes and think about what you've read, perhaps putting the events in correct order, or listing the main ideas. Choose the method of review that suits you best.

We're now ready for the last R–"Recite." When you were small, reciting usually meant standing up and saying a poem or a speech; but we can tell what we know in other ways. With SRA we recite by answering questions about what we've read.

III. Application

A. Guide trainee as he uses the SQ3R method in completing the Power Builder Starter

B. Ask trainee to list and explain the steps in the SQ3R method

IV. Test

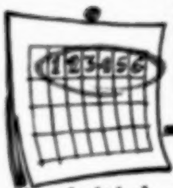
Permit trainee to do a SRA Power Builder in the appropriate color.

SUMMARY

Before entering the classroom the instructor should acquaint himself thoroughly with course content, and follow up with a course analysis, or a breaking up of content into organized sequential sections and units of study. This analysis should be further organized into a fairly detailed course outline to provide a guide or "road map" for instruction. The course outline is implemented by lesson plans, in sequence, to serve as a plan of action for teaching new information and skills.

CHAPTER V

THE FIRST WEEK IN THE CLASSROOM



The first week (of necessity) is a transitional period, or a time of adjustment for both the trainee and the instructor. In some training facilities the guidance personnel take over the initial orientation of the trainee. This is accomplished through an intake interview, or initial personal interview, and group discussions. Some tests are administered at this time also.

In groups, trainees become acquainted with the rules and regulations under which the program operates, and with the physical features of the building, (classrooms, rest rooms, cafeteria, the offices of the counselors and the administrative personnel). Early in the orientation period instructors may discuss with the trainee group the Basic-Remedial Education program, what may be gained from it, and what effect it has on employment possibilities. Other topics considered include fire drill procedures, safety and safety tests, when and how to fill out pay forms, and the chain of command followed for administrative consultation.

In a training program with several projects the above outlined orientation period probably will continue for three to five days. When a counselor is not assigned to the project, or is on duty for only short periods daily, the Basic-Remedial Education and occupational teachers would conduct a similar period of orientation in their work centers before beginning the planned study units.

FIRST IMPRESSIONS

GET OFF ON THE RIGHT FOOT

First impressions count. Put forth no effort to make an impression. Be yourself. Accept the trainee as he is, welcome him and let him know he will enjoy the time he is scheduled to attend the Basic-Remedial Education Program. Help him set short-term personal goals and assist in reaching them. Plan for quick success and achievement for his need is immediate, not long-term. Quick success is imperative to maintain early interest and to generate enthusiasm for further study and training.

Generally the trainee expects the study of Basic-Remedial Education to resemble the academic school program so often disliked or unsuited to his needs. For this reason pleasantly inform him that MDT training is different. For example, a variety of materials is provided so if one workbook, study sheet, system, or piece of equipment displeases him, he can move to another better suited to his eyes, hearing, or interest. Let him know at the first class session that due to the many ways of presenting information he will be permitted to vary learning procedures to find the most suitable one, as long as the end result is the same. In other words each of the several sets of systems of materials will provide essentially the same learning experiences and skills though the end result may be reached by a slightly different path. This lack of rigid structuring of learning is in itself a departure from the trainee's past classroom experiences, and identifies the difference in study activities.

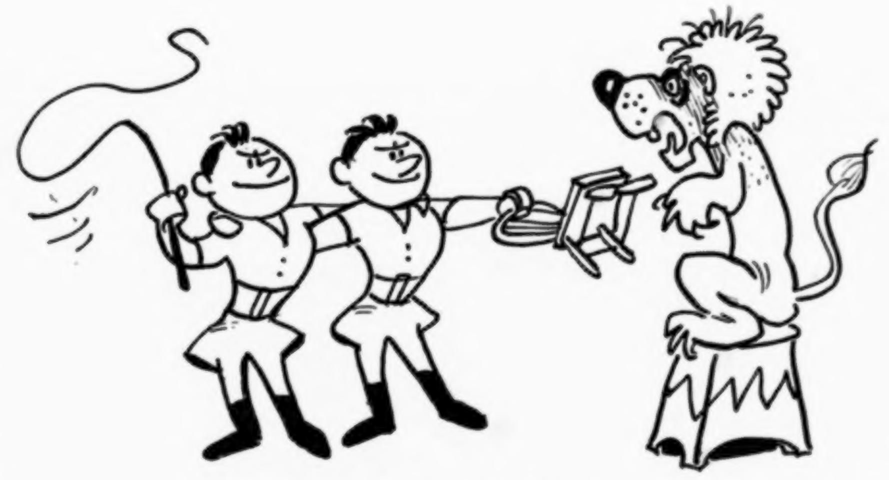
An important facet of the orientation period is getting acquainted with new associates. Getting acquainted carries a variety of connotations. For MDT programs it means learning to know the other trainees, the teachers, and the classroom with its variety of equipment and materials.

For some, getting acquainted with fellow students presents no problem. For others, however, it may be a major hurdle to be overcome. It is the responsibility of the teacher to assist in every way possible, and the sooner the "ice is broken" the better for all concerned.

BREAKING THE ICE

One instructor follows this plan on the first day. After trainees have assembled, and he has presented himself to the group, he requests each student to introduce the one seated next to him. Of course a short time is allowed to acquire information. Then each one tells what he has learned about his neighbor. The individual who cannot relate anything about himself, as a rule finds it simple to talk about another. This brief activity in oral expression has worked repeatedly as a means of acquainting the trainee with his peers.

Getting acquainted with the instructor is easy if the teacher does his part. Quickly learn the name of each trainee and for the first few weeks be especially alert to use it. In addition, group the trainees informally in the classroom. Avoid standing or sitting at the desk for to the new student either position may seem a symbol of discipline, status, or an indication of superiority. Acceptance of the new trainee must be complete. Further this idea by mingling with the students in the relaxed atmosphere of the halls and cafeteria, pausing for a friendly word, a joke, or a pleasant comment. In class, sharing incidents from your personal life, without any invasion of privacy, pictures you as another real live human being with problems comparable to theirs. For example, a joke about the cornbread or biscuits burned last night may bring forth a similar incident from a woman student. Other common problems include baby sitters, missing the bus to school, the need for economizing evidenced by patronizing resale stores, and the cost of haircuts, shoes, tires, or food. Shared problems help develop rapport between trainee and instructor.



SHARED PROBLEMS

Acquaintance also must be made with the materials and equipment. The visual aids tantalize the trainees who want to handle and play with them to learn how they work and what they do. Though instruction on individual machines usually is offered within the first week, it will have to be repeated for the group and perhaps reoffered individually several times before correct use is achieved. Considering the machines usually calls forth questions about the learning stations, and their use and purpose should be fully explained.

Most trainees will examine and handle the texts, workbooks, and magazines if for no other reason than curiosity. Some non-readers may find themselves interested in the pictures and illustrations. Others who have some reading skill may read a few lines out loud exciting their own interest and that of other class members.

During an early session the ground rules peculiar to each class should be specified and discussed. For example, explanations should be made in regard to good housekeeping. The trainee should be told where to place materials he has finished using, what to do with waste paper, how to place the chairs and tables before leaving the room, and where the magazines should be returned after use. Through development of classroom orderliness some habits of neatness may be formed.

Wall progress charts are "eye-catchers" and the new trainee enjoys learning how he will be able to plot and observe his individual progress in the weeks ahead.

Usually required is an explanation of the need for trainee attendance, punctuality, and the system of starting and ending work and study periods in the training facility. These items may be oriented to future employment as a means of emphasizing immediate need and relationship.

The work accomplished during the first week leads toward the successful future of the individual trainee. He should understand the scope, sequence, and duration of the project to know in a general way what to expect. The first few days set the pattern of good study and work habits to carry over later to the world of work just as the instructor's enthusiasm transfers into trainee enthusiasm and interest. Work enjoyed is seldom considered hard work, for true enjoyment of effort is fun.

Throughout the first week of study activities, a preliminary phase of trainee evaluation should be started. At this time the instructor should learn from the guidance department results of the initial interview and tests. This information serves as a guide for trainee grouping but not as a means of prejudging capabilities, attitudes, or behavior.

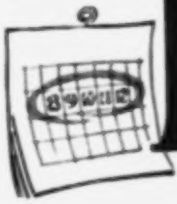
Also during the first week the Basic-Remedial Education instructor is alert to comments, attitudes, and interests, in short to anything which gives information about the trainee. Observed and noted will be habits and patterns of speech, profanity, self-confidence, self-esteem, dress, manners, and personal problems, as well as performance in class. In the next chapter evaluation of the trainee will be considered further.

SUMMARY

Effort should be exerted during the first week to establish teacher-trainee rapport through mutual understanding and interest. Sharing of problems furthers the friendship desired. This does not imply loss of dignity on the part of the instructor but rather a developing respect for him. The first few days establish the working base for the entire project. For this reason good habits should be formed in the beginning class periods as a means of helping mold the individual into a desirable, employable person.

CHAPTER VI

THE SECOND WEEK



During the second week of activities the Basic-Remedial Education instructor should plan for his initial evaluation of each trainee. As was mentioned at the close of the preceding chapter some preliminary information can be received from the counselor. At this point a more detailed discussion of what may be expected from this source should prove useful.

The guidance counselor can be of inestimable value to the Basic-Remedial Education instructor in the evaluation, testing, and inventory of new trainees. In some cases from two to five days may be used for this purpose. Probably of most value is the information derived from test scores in mental ability and achievement in reading and arithmetic.

Though some continue to use the Lorge-Thorndike and Kuhlman-Finch mental tests, for the most part they have proven impractical since many MDT trainees are inadequately prepared to take them. Since they do not test as satisfactorily as might be expected, other tests provide more usable results.

The Revised Beta mental test which is a civilian refinement of the World War I army test of mental ability eliminates reading facility as a requirement for successful completion. For example, a poor reader who scored only 79 on the Kuhlman-Finch jumped to a score of 110 in the Beta test. Since many trainees are poor readers this test has rated them more accurately than the others mentioned. Also it appears to be reliable in covering the wide spread of ages and levels of education characteristic of Manpower trainees.

The Wide Range Achievement test by Jastak has proved valid though the Stanford tests are widely used too for reading and arithmetic scores. Usually the counselor administers the test on the second day of the orientation period and in a short time can furnish scores to the Basic-Remedial Education instructors for placement and evaluation purposes. The same test given toward the end of the project uses the test-retest or the equivalent forms method to determine the amount of progress made.

Kuder Preference tests also may be given but have not been found practical for some trainees in MDT programs. However, Employment Security gives the General Aptitude Test Batteries (GATB) to trainees and these scores are available to Basic-Remedial Education instructors.

Some of the tests may prove more usable and practical in certain local situations.

Several well-chosen forms provide much helpful data. The student history form (personal data sheet) is one of the most valuable sources of information about individual trainees. The form is filled out by the trainee if he can read and write or by the

CUMULATIVE
FOLDER

counselor if he cannot, and furnishes a wealth of information about the trainee, his education, family background, and personal life. An autobiography is another valuable source of information about the student.

The job history and medical history forms completed and placed in individual cumulative files are also available to instructors.

In addition the counselor reviews the weekly and/or monthly trainee evaluation written by instructors with a view to positive correction action where applicable and advisable. Counselor-instructor discussion of such information provides a further source of current information in regard to trainee problems.

Because of the breadth of data available from the counselors, the Basic-Remedial Education instructor should plan an adequate amount of time to acquire, record, and assimilate it as the basis for his own evaluation and placement of the trainee. Having this data accessible makes earlier grouping possible and further inventory easier.

THE BASIC-REMEDIAL EDUCATION INVENTORY

The Basic-Remedial Education inventory may be separated into two phases: (1) informal, and (2) testing by oral and written means. The informal inventory is accomplished primarily through teacher observation of trainee reactions, attitudes, and achievement in class situations. To be more definite, some specifics for consideration are: (1) appearance; (2) self-confidence; (3) attitude toward work, the teacher, or just being in the training program; (4) arithmetic, reading, writing and spelling performance.

Testing by oral and written means can take many forms, though the wise instructor avoids use of the word "test." Some teachers use a simple, written, interest-inventory form, which can be checked. Though the information derived has some value, probably as much or more is learned from the questions asked in regard to it. Others permit the group to form a class organization to hold office. Leadership is evidenced and developed in this way and may be spread to all trainees by electing new officers on regularly specified dates.

The written autobiography furnishes many interesting facts. However, this pertinent information may be recorded on tape by those who are functionally illiterate. Playback of any trainee recorded material offers evaluative opportunity to the instructor.

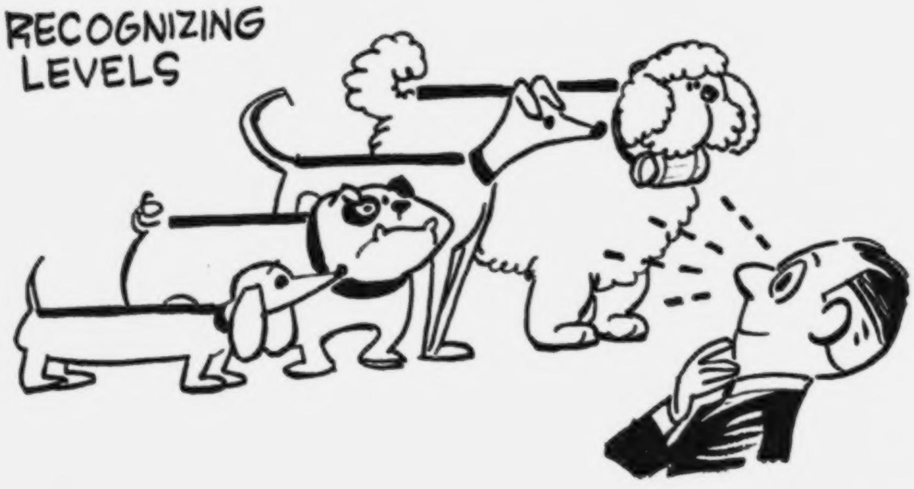
Initial oral practice and performance keyed to trainee background and interests offer further placement clues. A subject such as "Why did I choose to come to this program?" may provide considerable insight into trainee motivation and ability as well. In math a simple practical problem can serve the same purpose. For example: If you had for lunch a sandwich costing 25¢ and a glass of milk 10¢, how much did you spend?

Some retesting may occur. In communications applicable tests include (1) the SRA starting level guide (above third grade level); (2) graded oral reading tests; and (3) graded word lists. In math, parts I and II of the Steck Mastery test offer an initial achievement base, and may be followed by the three part inventory tests which accompany the Refresher Arithmetic test and workbook. These tests may serve as a valuable aid in placing the trainee within the proper level, as well as on the correct unit therein.

All data gleaned from the counselor, from observation, and from formal and informal testing should be carefully studied and evaluated. Trainees then should be placed tentatively on beginning, intermediate, or advanced levels, and tried out for successful performance. Actually it is practical to place a trainee slightly below the level of his test results in order to insure him the joy and pleasure of fairly rapid advancement and accomplishment. Success promotes further success, development, interest, and perhaps more important, the feeling that maybe "I'm not so stupid after all."

RECOGNIZING ABILITY LEVELS

Placement of trainees according to levels can scarcely be done exclusively on the basis of the information discussed to this point. For this reason it seems wise to offer as a general guide some



distinctive features which differentiate individuals and mark them as qualifying for one ability level as opposed to another. The instructor should be familiar with the variations as an added aid to evaluation and placement of the trainee.

It would be difficult to agree entirely on a hard and fast list of characteristics as the basis for grouping trainees on ability levels. Nevertheless observation of trainees in MDT programs suggests grouping according to similarities recorded as follows.

ABILITY LEVELS

▨ Beginning Level -- Grades 1, 2, 3

1. Has less than 1000 word sight vocabulary
2. Is usually unable to recognize main idea
3. Has poor habits of study
4. May be able to perform simple addition and subtraction but little or no multiplication or division
5. May not be able to count and make change of money
6. May not write; may print some
7. Spells poorly
8. Has little idea of sentence structure
9. Has brief attention span
10. Has little self-confidence
11. Knows little about community, state, and nation or events affecting them

■ Intermediate Level -- Grades 4, 5, 6

1. Has workable sight vocabulary of common, everyday words
2. Recognizes and uses words connected with occupational training
3. Shows improvement in reading speed, retention, and comprehension

4. Shows poor spelling ability except for commonly used words
5. Computes rather easily in simple addition, subtraction, multiplication, and division
6. Shows little or no ability to use fractions or work word problems
7. Shows little understanding of state and world affairs

Advanced Level -- Grades 7 and above

1. Reads as well as the average individual
2. Is a novice in regard to developmental reading of nearly all kinds
3. Writes acceptably
4. Uses acceptable sentence structure
5. Does not necessarily write acceptable paragraphs
6. Can find main idea in material with ease
7. Writes acceptable letters and simple reports
8. Performs well the four basic arithmetical computations, and fractions, decimals, percents with fair ability
9. Can apply math to taxes and other everyday uses
10. Has some knowledge of, and interest in, current events on national and international level
11. May participate in some community activities

An occasional trainee may enter the MDTA program with a tested ability beyond the twelfth grade. This individual should be directed into a stage of self-education and development along lines of personal interest and need. It is true too that some trainees at this stage show weaknesses in certain areas and are in need of remedial training to correct faults and deficiencies. These areas might include poor reading habits and eye movements, regressions, unsatisfactory study habits, inadequate spelling, and others. This more advanced trainee may be encouraged to develop leadership and polish skills by acting as moderator for panel discussions, chairman of a committee, or by assisting a slower trainee in need of help.

LEVELS DEFINED

At this point some explanation of levels should be included. An informal survey of adult Basic-Remedial Education materials available from several states indicated some discrepancies which will be discussed for clarification of terminology.

In some areas of the country four ability levels are used. In one they are listed as Introductory, Elementary, Intermediate, and Developmental. Here the Introductory level parallels primary instruction or grades 0 - 3; Elementary, grades 4 - 6; Intermediate, grades 7 - 9; and Developmental, grades 10 - 12, or the equivalent of senior high school work. Each stage overlaps another to some extent through repetitive drill and practice.

In other regions the three levels stated for purposes of inventory and placement include Beginning, Intermediate, and Advanced. Some variations exist in grade levels assigned to these stages as follows:

	Beginning	Intermediate	Advanced
Grade Level	0 - 3	4 - 6	7 - 9
	0 - 4	5 - 8	9 - 12

The use of these three stages implies a fourth or Developmental stage where self-education and advancement are encouraged to the full potential of the individual.

In MDT programs Basic-Remedial Education per se is unique in that it attacks two problems primarily. First, it helps trainees who need tool skills in reading, computation, and problem solving. Second, it provides remedial training in the areas of education which help an individual to use the basic skills for personal use, in daily living, on the job, and as a citizen. In this second phase through personal and ability inventories the areas of weak skills are identified and strengthened.

Some differentiate between Basic and Remedial Education. On the premise that Basic Education covers grades 1 - 6, it is in this stage that communications and computational skills are learned, applied, and polished. At grade 7 and above, according to this line of thought, remedial education takes over to correlate everyday living problems and the Basic Education training.

In Tennessee MDT programs, however, Basic and Remedial Education walk hand-in-hand at all levels. Hence for all practical purposes material in this handbook is covered by the term Basic-Remedial Education.

The levels used in this handbook are Beginning, grades 0 - 3, Intermediate, grades 4 - 6; and Advanced, grade 7 and above. This grade level designation is suggested only for the instructor to use in identifying the ability level of the trainee and to facilitate selection of instructional materials, most of which are classified by grade.

At this point it is important for the new teacher to be aware of some factors learned by experienced MDT Basic-Remedial Education instructors. Never identify a trainee as tested to be in a "low" group. In other words say, "John, you are to be placed in Mrs. Jones' class." In the event a trainee completes work in a Beginning level class and is moved to another, avoid saying, "John, you may go to the next higher (or Intermediate, or Level 2) group." Instead say, "John, the materials you need for the study of decimals are in Mrs. Allen's room. We'll move you in there for awhile." If a plan of this sort is followed no stigma is attached to the low group or those left in it, and those advanced have no feeling of superiority. In other words use a psychological approach to the levels rather than a factual one.

Since many films and filmstrips are marked with a grade level it may be wise to cover, coat, or otherwise conceal the grade level on them. Some trainees react unfavorably at age twenty, thirty, or forty, if a grade 3 filmstrip is shown them. On the other hand if the grade level is not known the material is accepted and enjoyed.

Regardless of what designation is applied to ability levels there is a considerable amount of overlapping. This is more desirable than not, for skills and procedures must be repeated to be learned and applied.

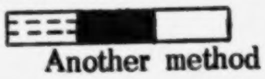
TRAINEE PROGRESS CHARTS

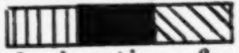
Though trainee evaluation should be kept to a minimum, it should be kept in mind that it is only a measuring device to show student progress. Nevertheless, it is not enough to evaluate the trainee through individual conferences, tests, and performance. In addition some graphic means can be used to show progress. The Progress Chart fills this need.

Each teacher can adapt the Progress Chart to his own course. One might let numbers represent the sequential assignment sheets while another could use the same chart and divide it into topical units of work. As the trainee completes each assignment successfully he may be allowed the joy of coloring the block representing the completed unit though in some cases the instructor may need to assume this responsibility. As filled in this way, the chart shows only completion of the work, not quality or any degree of comparison of grade or kind one against the other. The length of colored line, or units completed, does not necessarily represent the diligence of the trainee. One student may have begun as a non-reader and progressed through no more than six or seven assignments, whereas another starting with average reading facility may have completed twenty-five or more in the same time. This is no reflection on the first student who started from zero, and was a slower worker.

Over-emphasis of the progress chart should be avoided and it should not be used to emphasize progress per se. The trainee should never feel that marking it is a principal goal of the program. Neither is he the only one who may mark the progress chart. In some cases the instructor may feel a need to indicate in the square the number of times the trainee attempted a lesson. This may be done in any of several ways, as suggested here.

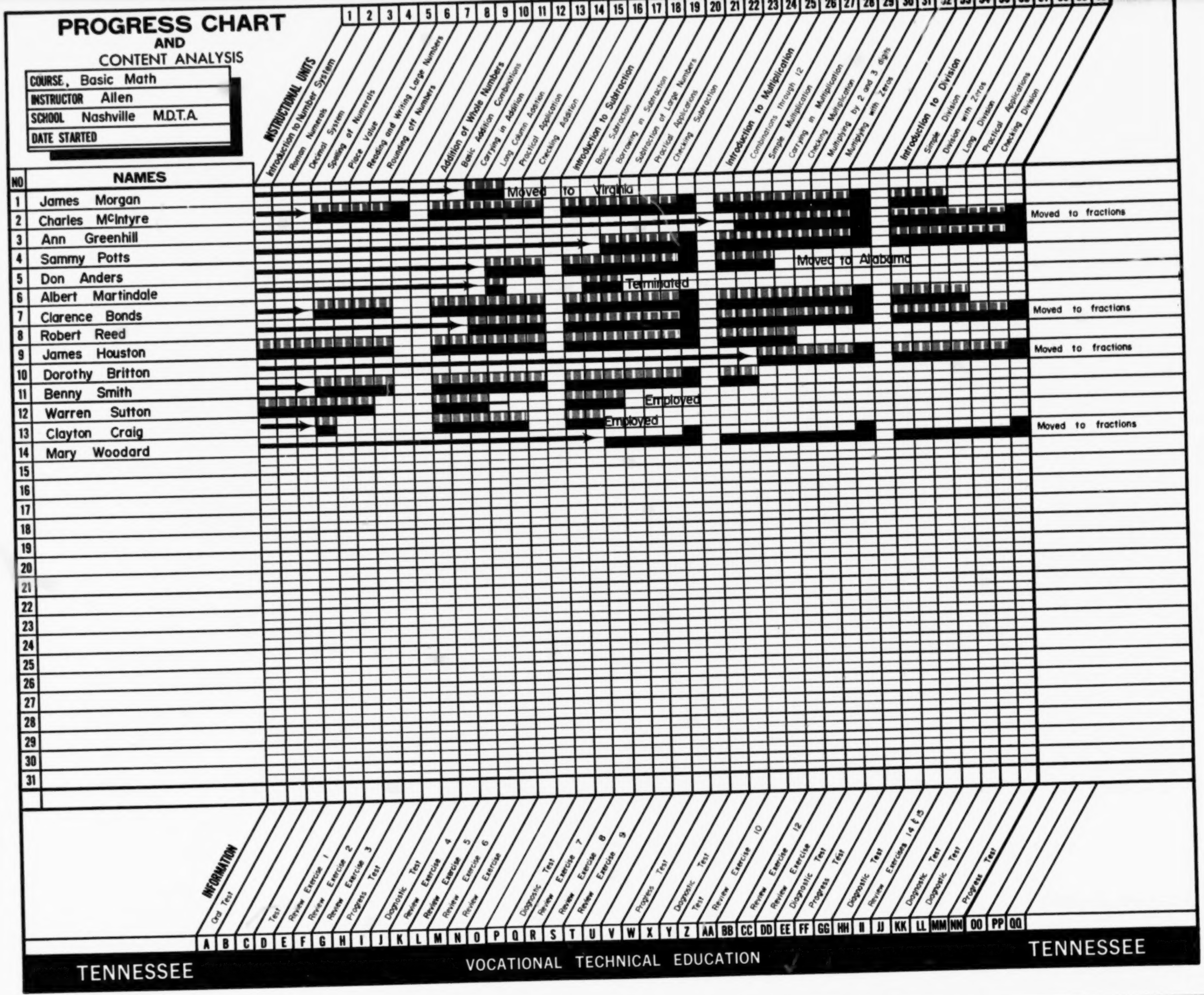
The broken lines show the first, second, and third attempts to complete a lesson, but the solid line indicates the final effort wherein the student finished the prescribed project, or work satisfactorily.



Another method of illustrating the same point shows the square marked with straight lines in pen or pencil, with a colored pencil mark to indicate satisfactory completion of the assignment. 

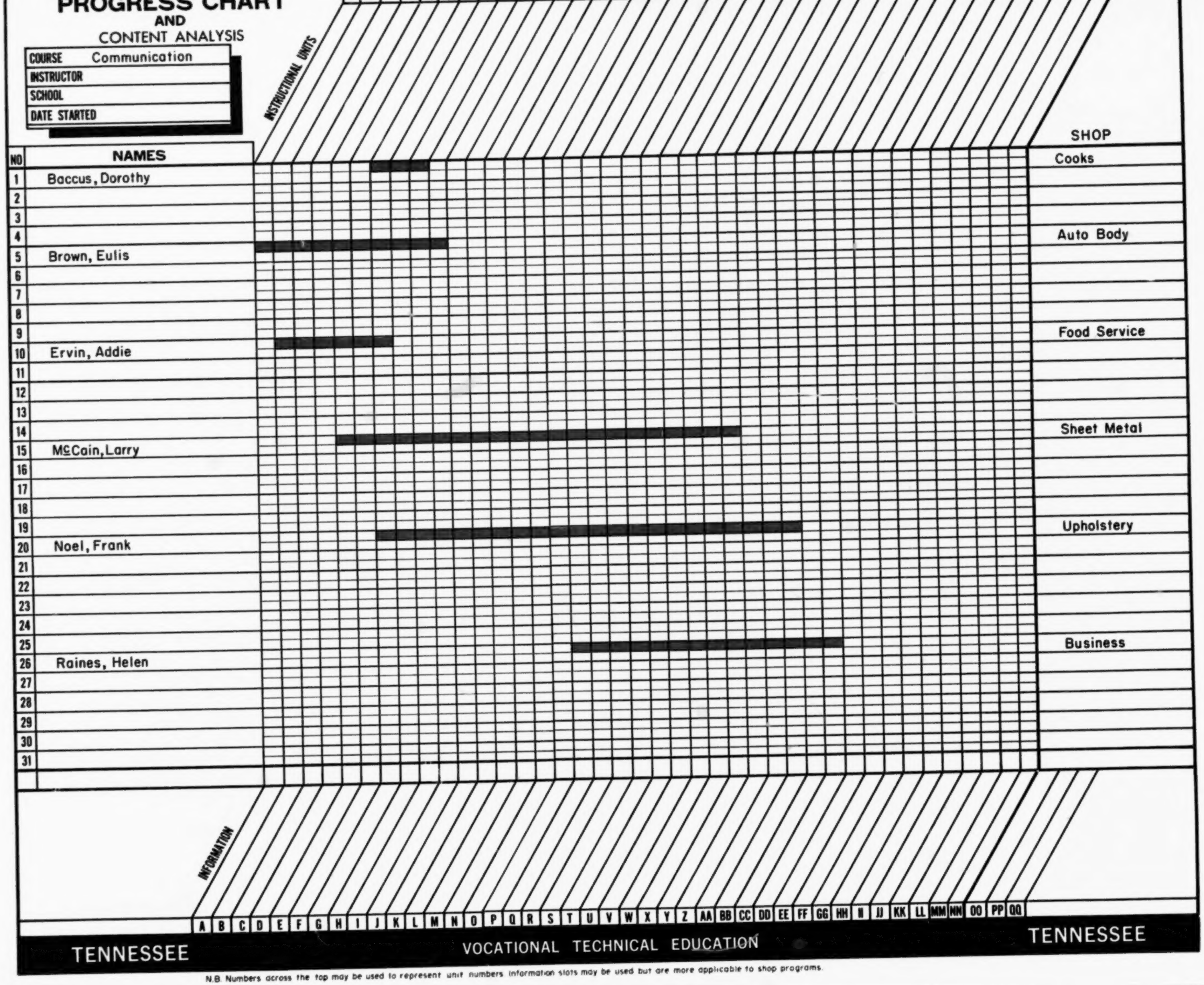
On or attached to the progress chart should be a key to the instructor's individual designations for the chart markings. This is important to assist the trainee to mark and/or to understand the chart more easily and to enable others (visitors, teachers, and supervisors) to read the chart correctly.

Samples of progress charts follow.


PROGRESS CHART
AND
CONTENT ANALYSIS
COURSE, Basic Math
INSTRUCTOR Allen
SCHOOL Nashville M.D.T.A.
DATE STARTED
INSTRUCTIONAL UNITS
Introduction to Number System
Roman Numerals
Decimal System
Spelling of Numerals
Place Value
Reading and Writing Large Numbers
Rounding off Numbers
Addition of Whole Numbers
Basic Addition Combinations
Carrying in Addition
Long Column Addition
Practical Application
Checking Addition
Introduction to Subtraction
Basic Subtraction
Borrowing in Subtraction
Subtraction of Large Numbers
Practical Applications
Checking Subtraction
Introduction to Multiplication
Combinations through 12
Simple Multiplication
Carrying in Multiplication
Checking Multiplication
Multiplying by 2 and 3 digits
Multiplying with Zeros
Introduction to Division
Simple Division
Division with Zeros
Long Division
Practical Applications
Checking Division
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
NO
NAMES
1 James Morgan
2 Charles McIntyre
3 Ann Greenhill
4 Sammy Potts
5 Don Anders
6 Albert Martindale
7 Clarence Bonds
8 Robert Reed
9 James Houston
10 Dorothy Britton
11 Benny Smith
12 Warren Sutton
13 Clayton Craig
14 Mary Woodard
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Moved to Virginia
Moved to Alabama
Terminated
Employed
Employed
Moved to fractions
Moved to fractions
Moved to fractions
Moved to fractions
INFORMATION
Oral Test
Test
Review Exercise 1
Review Exercise 2
Review Exercise 3
Progress Test
Diagnostic Test
Review Exercise 4
Review Exercise 5
Review Exercise 6
Review Exercise
Diagnostic Test
Review Exercise 7
Review Exercise 8
Review Exercise 9
Progress Test
Diagnostic Test
Test
Review Exercise 10
Review Exercise 12
Review Exercise
Diagnostic Test
Progress Test
Diagnostic Test
Review Exercises 14 & 15
Diagnostic Test
Diagnostic Test
Progress Test
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA BB CC DD EE FF GG HH II JJ KK LL MM NN OO PP QQ
TENNESSEE
VOCATIONAL TECHNICAL EDUCATION
TENNESSEE

PROGRESS CHART
AND
CONTENT ANALYSIS

COURSE Communication
INSTRUCTOR
SCHOOL
DATE STARTED



NO	NAMES	SHOP
1	Baccus, Dorothy	Cooks
2		
3		
4		Auto Body
5	Brown, Eulis	
6		
7		
8		
9		Food Service
10	Ervin, Addie	
11		
12		
13		
14		Sheet Metal
15	McCain, Larry	
16		
17		
18		
19		Upholstery
20	Noel, Frank	
21		
22		
23		
24		
25		Business
26	Raines, Helen	
27		
28		
29		
30		
31		

TENNESSEE VOCATIONAL TECHNICAL EDUCATION TENNESSEE

N.B. Numbers across the top may be used to represent unit numbers information slots may be used but are more applicable to shop programs.

Progress per se is not always measurable, but may be manifested when the trainee obtains and holds a job. Usually progress can be evaluated, however, by the amount of improvement evidenced between the time of enrollment to the time of leaving the training facility. The basic test of Manpower Development Training after all is the impact on the individual and his role in society.

Observed in the fact that the graduates of some training classes are more successful in obtaining and holding a job than those from other training classes. In analyzing the difference between the more and the less successful trainees, one relates to the training and experience of the instructor, his attitudes, the instructional approach, and the relationship established between the school and potential employers.

SUMMARY

Second week activities of the instructor include evaluation and inventory of student attitudes, background, interests, and capabilities, as well as regular teaching duties. Much assistance along these lines may be gained from the counselor who can furnish a wealth of invaluable data. Further inventory by Basic-Remedial Education instructors includes informal evaluation and testing by oral or written means. Placement of trainees according to ability levels should be accomplished as early as possible, and certainly by the end of the second week.

CHAPTER VII

PROGRESSION OF INSTRUCTION

Instruction should move forward throughout the duration of the project progressing daily and by units from the simple to the more complex. Learning should be reinforced or overlearned through repetition and practice suited to the individual, his interests, and needs.

CLASS ORGANIZATION

Basic-Remedial Education classes offer a wide range of variation which is both natural and advisable for just as trainees differ, so do teachers. The difference in individuals provides the basis for a broad diversity of instructional approach which essentially is composed of (1) the group approach; (2) the individual approach; and (3) a blend of the group and individual approach. The presentation chosen is the one which each instructor feels he can use to the best advantage in a given situation. With some trainee groups, particularly the Beginning Level, all instruction may need to be on an individual basis, though even with this ability level some group activities prove practical.

In the group approach the instructor may teach the class as a whole or break it into three or more segments, sub-groups, or units of similar ability. The whole group may be taught or have drill and/or activities as a total class unit for one-third, one-half, or some other portion of the class period. Depending on the achievement and ability, for the rest of the period the class may be taught in two, three, or more groups. In this time period the instructor moves from one small group to another assisting and teaching as required. For example during the first third of the period the entire group could have a "listen and read" period. The second third could be devoted to small group work on sentences, spelling, and writing, whereas; in the last third the entire group could be brought together again for a dictation period.

In some communications classes little group activity is provided at all. However, a spontaneous grouping may occur over subject matter of interest. For example one trainee encountered the word "dolphin" and asked another its meaning. After both consulted the encyclopedia, others became interested and further reading followed in books on undersea animals. This reading was followed by a discussion to pool facts learned individually.

Other spontaneous groupings may occur as a result of controversy. The natural outgrowth of the argument is some form of oral group activity such as talks on phases of the subject, a panel discussion, or possibly a debate.

Few MDT math classes are grouped. Notable exceptions include group study of income tax forms and/or filling them out, for study of measurements and rules, and occasionally a spontaneous grouping. Group activity is desirable in math also for measuring cloth (upholstery trainees) and for study and drill of the rule (for millman and machinist trainees).

The group approach has some advantages. Probably it offers a more economical use of materials, and it may seem easier for the teacher initially at least, because it more nearly follows the traditional method of instruction widely used for so long. However, it has some marked disadvantages, namely the problem of homogenous grouping due to variations in ability and need. Too, in the group approach usually there is a noticeable lack of motivation and disregard of individual differences.

The individual approach, on the other hand, has as its first consideration, provision for motivation and individual differences. This is easily understood due to the one-to-one association between teacher and trainee which in itself is a huge factor in the rapport desired for successful progression. No doubt individual instruction requires more planning before entering the classroom, but thereafter the teacher is freer to give help and instruction as it is needed. It is true that success of the individual approach depends on a relatively low teacher-trainee ratio. Since MDT classes seldom exceed twenty, and on the lower ability levels, may include an even fewer number, the teacher-trainee ratio is not a problem. Also essential for success with the individual approach is selective choice and use of machines, and programed and/or self-correcting materials to free the instructor for time with each trainee as needed.

The individual approach has another major advantage in that the trainee competes only against himself. It should be emphasized that he is under no stress or strain to "beat the clock" or achieve a higher grade than another class member.

Regardless of the use of the two organizational approaches already discussed, some independent activity may be expected to emerge from the planned class program. Some trainees prefer to work alone and progress more rapidly as a result, advancing as far as possible without assistance. Others may follow an interest provoked by the assignment even to the point of doing some simple "research" on their own. Encouragement should be given trainees to perform independently as early as possible as an ideal means of promoting interest in lifetime self-education and development.

INDIVIDUAL INSTRUCTION

Though the individual approach as a means of class organization was discussed earlier in this chapter, much can be added about how the teacher plans for individual instruction. Recall for a moment the trainee's personal and socio-economic background discussed in detail in earlier chapters. Recall also in Chapter VI the list of trainee characteristics according to levels. As memory reassimilates this information good judgement dictates the need for using individual instruction. The Basic-Remedial Education teacher will find it the one method suited to meet the challenge presented by the collage of diverse backgrounds of the MDTA trainee.

INDIVIDUAL INSTRUCTION

What is individual instruction? It is instruction given each trainee on his own level of ability taking into consideration his background, education, and capability, and allowing him to progress at his own rate as rapidly and as far as possible. A big order? It is indeed, but not so big that it can't be filled to a considerable extent. Planning is the key, naturally.

Instructors have stated that a course outline is the first step in planning because it frees the teacher and puts him in position to offer individual instruction. The second step is the lesson plan. These were discussed in Chapter IV and will not be considered further at this point.

The third step in planning for individual instruction and fundamental to smooth classroom operation, is the assignment sheet, sometimes called the individual lesson sheet. The assignment sheet may be a single daily sheet or a series of sheets for a unit of work. It is an orderly plan of work which is to be completed by the trainee before he progresses to the next one.

In one training facility where the Basic-Remedial Education instructors make excellent use of these assignment sheets they plan in this way. One sheet is planned for each week, corresponding to the text and/or workbook unit, and one is planned for each level. Since the program was forty-eight weeks in in length, forty-eight sets of sheets were structured, one on each level for each week, and containing enough work for the average trainee to complete in the allotted time. Each sheet though designed for one week could be completed in three days by some trainees whereas others required three weeks to accomplish the same amount of work.

Following evaluation and grouping of trainees on levels, assignment sheets are distributed and each begins work at his own rate of speed, asking the instructor for as much help as he needs. If a trainee completes the entire series through the Advanced Level, developmental planning for further education carries him as far as he can progress.

A distinct advantage of the assignment sheet is that it frees the teacher for those who need the most help. Even more important is that an individual entering several weeks late or even at the midpoint of the project presents no problem of disrupting the instructional progression of others. He is handed the assignment sheet for the unit at which he is placed, and proceeds as he is able. With the assignment sheet in use, no need arises for the class to be held at one point while the newcomer "catches up."

The following series of three assignment sheets cover units 15, 16, and 17 of instruction for a Beginning Level group. Study Unit 16 shows the assignments to be completed but they need not be done in the order listed. The one exception is "oral performance" which usually is a group activity scheduled weekly for a specified day (for example, Friday).

By the time the trainee reaches the Unit 15 assignment sheet, he has already completed Steps to Learning, Book 1, and the Adult Reader. Steps to Learning, Book II, was begun with Unit 8. By Unit 24, I Want to Read and Write will be completed, and work planned for continued progression.

The listening tapes mentioned may be commercial or teacher made. For the Beginning Level, most commercially prepared tapes seem too advanced, and for this reason those planned by the instructor are more usable. Supplementary readings are suggested, not required, as part of the assigned study, and are taken from the classroom shelf of books for enrichment.

Assignment sheets adapt equally well to both math and communications. Sample sheets in a series for three consecutive weeks follow.

ASSIGNMENT SHEET

Communications
Unit 15
Time - 1 week

NAME:____

DATE BEGUN______________________________________

DATE COMPLETED__________________________________

ASSIGNMENTS FOR UNIT 15:

Steps to Learning, Book II, pp. 51-57

Spelling lists #21, #22

I Want to Read and Write, pp. 13-22

Listening tape #1, "How to Listen"

Oral performance

SUPPLEMENTARY:

Review spelling lists

Flash card drills

Supplementary reading

ASSIGNMENT SHEET

Communications
Unit 16
Time - 1 week

NAME:____

DATE BEGUN____

DATE COMPLETED___________________________________

ASSIGNMENTS FOR UNIT 16:

Steps to Learning, Book II, pp. 58-63

Spelling lists #23, #24

I Want to Read and Write, pp. 23-30

Written performance - a report on your supplementary reading book

Oral performance

SUPPLEMENTARY:

Review spelling lists

Review listening tape #1

Flash card drills

Supplementary reading

ASSIGNMENT SHEET

Communications
Unit 17
Time - 1 week

NAME: ______________________________

DATE BEGUN ______________________________

DATE COMPLETED ______________________________

ASSIGNMENTS FOR UNIT 17:

Spelling lists #25, #26

I Want to Read and Write, pp. 31-42

Listening tape #2, "Following Directions"

Oral performance

SUPPLEMENTARY:

Review spelling lists

Flash card drills

Supplementary reading:

Add: 1. Jim Forest and the Flood
2. Pearl Diver

Preparing assignment sheets, though time-consuming initially, is much easier than might seem at first thought, and certainly is simpler than facing a class each day with few or no plans made. The technique for planning assignment sheets follows.

Working from the course outline list sequentially the areas to be covered. Next, divide available instructional materials into the large areas, for example spelling and reading in communications, and in basic computational areas in math. Sort each stack of materials in order, working from the simplest on top, to the most difficult on the bottom of the pile. Within any given workbook separate with markers the amount of work deemed possible for completion in each unit. Follow this procedure in each major subject area.

At this point note and list the separated materials into units beginning with the simplest from each area. Continue listing progressively by units following this same plan.

The wise instructor plans assignment sheets well in advance of the time they will be needed. Though the time required for this work may be considerable, the instructor is amply repaid for his effort by the ease and smoothness with which his classes operate through individualized planning for instructional progress.

LEARNING SHOULD BE FUN

Accepted is the premise that one learns more rapidly if the experience is pleasurable. Math and communications can be fun if the instructor tries to make the activities enjoyable. Games offer a practical means of learning with fun thrown in for good measure.

LEARNING SHOULD BE FUN

Since nearly all trainees watch television to some extent at least, they are already familiar with how to play Password, To Tell the Truth, and Concentration. Easily adapted to both math and communications these games encourage learning, stimulate the spirit of competition, and provide many happy and amusing moments. Password and Concentration both can be geared to trainee background or shop vernacular. To Tell the Truth can relate to occupations, travel, history, or unusual events affecting an individual.

Another useful fun activity involves the Keep Talking game, which is a good warm-up activity. To play, call on any trainee to keep talking for 1 minute (or longer) until the instructor sounds the bell with an automatic timer. When the bell rings another trainee must talk until the time comes for still another to take his turn. Initially use Keep Talking for short periods, and based on trainee acceptance lengthen to a longer time allowance. This game offers good oral expression practice and results in much laughter from the odd comments proffered in an effort to Keep Talking.

For communications classes the Letter Game is fun. A handout sheet similar to the one on the next page may be distributed to the trainees. At the signal to begin, the students try in this case to Locate the Fifty States. This game could be used equally well for cities, for shop terms, and for other means of orienting the study of communications to trainee life and future. When time is called the one who has identified the most states (or cities or shop terms) is declared the winner. At the instructor's discretion a small award may be offered, (a candy bar or a cold drink), for even such a small incentive encourages extra effort. As one teacher remarked, "The trainees work like beavers for a small prize."

In math a number of games may be used for both fun and learning. One called Math Knowledge , an acrostic type game makes use of an explanatory statement which the trainee is to interpret in one word. The winner, of course, is the one who has the most correct answers in the allotted time. A sample of the

Locate The Fifty States

D	X	I	L	L	I	N	O	I	S	C	O	N	N	E	C	T	I	C	U	T	T
N	C	M	O	N	T	A	N	A	S	T	R	W	I	S	C	O	N	S	I	N	X
A	O	Z	A	E	R	A	W	A	L	E	D	N	E	W	M	E	X	I	C	O	Y
L	L	S	N	W	V	A	V	I	M	I	S	S	I	S	S	I	P	P	I	G	X
S	O	E	A	R	O	M	O	N	B	E	R	I	H	S	P	M	A	H	W	E	N
I	R	K	I	S	A	A	S	I	A	T	I	M	I	S	S	O	U	R	I	E	S
E	A	U	D	I	N	B	L	G	A	N	A	T	O	K	A	D	H	T	R	O	N
D	D	H	N	T	R	A	C	R	E	H	I	M	H	A	N	M	L	K	U	N	E
O	O	E	I	K	I	L	K	I	T	J	H	L	I	F	M	E	C	T	A	E	B
H	A	Y	S	Y	X	A	S	V	G	N	I	M	O	Y	W	O	H	E	K	W	R
R	U	T	E	A	N	M	I	C	H	I	G	A	N	R	S	C	H	X	S	Y	A
E	P	O	N	S	D	M	P	E	N	N	S	Y	L	V	A	N	I	A	A	O	S
K	L	X	A	A	R	A	K	J	I	C	F	T	E	R	D	C	B	S	L	R	K
E	O	S	T	I	R	E	V	A	Z	Y	E	I	O	W	A	O	H	X	A	K	A
N	U	F	O	G	T	V	J	E	U	N	N	L	T	S	R	H	A	T	U	P	O
T	I	L	S	R	N	O	N	W	N	H	I	M	L	D	N	A	L	Y	R	A	M
U	S	O	E	O	O	J	J	E	E	N	A	T	O	K	A	D	H	T	U	O	S
C	I	R	N	E	M	T	S	B	A	N	U	W	A	S	H	I	N	G	T	O	N
K	A	I	N	G	R	S	Y	X	Z	A	U	C	A	L	I	F	O	R	N	I	A
Y	N	D	I	W	E	S	T	V	I	R	G	I	N	I	A	R	I	Z	O	N	A
W	A	A	M	E	V	A	Y	S	R	V	B	L	P	K	I	C	K	S	T	E	R
R	U	O	A	Z	M	S	R	T	M	A	S	S	A	C	H	U	S	E	T	T	S

Alabama
Alaska
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
Florida
Georgia
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri

Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

handout sheet for playing the game follows on the next page. (See Math Acrostic, page 104.)

The Number Quiz, also for use in Math, consists of a square divided into nine equal parts as illustrated here.

The trainee is instructed to place in each square a number so each row will total 15, either straight across, up and down, or on either diagonal. This is a real puzzler for many trainees, and a good numbers interest-builder.

KEY:

			= 15
8	1	6	= 15
3	5	7	= 15
4	9	2	= 15
= 15	= 15	= 15	= 15

MATH KNOWLEDGE

M ______________________________ An expert in Mathematics

A ____________________ A type of Arithmetic in which letters represent numbers

T ______________ The whole amount

H _________________________ One side of a right triangle

E ______________ Identical in value

M ______________ Take away

A __________ A portion of a circle

T ____________________ A three sided figure

I ________________ To reverse in position

C ______________________________ The outside distance of a circle

S __________ The results of adding numbers

Key

M = Mathematician
A = Algebra
T = Total
H = Hypotenuse
E = Equal
M = Minus
A = Arc
T = Triangle
I = Invert
C = Circumference
S = Sum

THE AGE GAME

(1)

9	10	11	12	13	8
14	15	24	25	26	27
28	29	30	31	40	41
42	43	44	45	46	47
56	57	58	59	60	13

(2)

33	34	35	36	37	32
38	39	40	41	42	43
44	45	46	47	48	49
50	51	52	53	54	55
56	57	58	59	60	46

(3)

3	6	7	10	11	2
14	15	18	19	22	23
26	27	30	31	34	35
38	39	42	43	46	47
50	51	54	55	58	59

(4)

3	5	7	9	11	1
13	15	17	19	21	23
25	27	29	31	33	35
37	39	41	43	45	47
49	51	53	55	57	59

(5)

5	6	7	13	12	4
14	15	20	21	22	23
28	29	30	31	36	37
38	39	44	45	46	47
52	53	54	55	60	13

(6)

17	18	19	20	21	16
22	23	24	25	26	27
28	29	30	31	48	49
50	51	52	53	54	55
56	57	58	59	60	16

The Age Game permits the instructor to "guess" the age of any individual. The procedure follows.

On the chart above, point out each block (one through six) in which your age appears. As the individual points to the blocks, mentally add the top right-hand number of each block to the same-position number of succeeding blocks. The total represents the age of the person.

For example, because John is 23, he points out blocks 3, 4, 5, and 6. In order, add the top right-hand number of those blocks, or 2+1+4+16=23, his age.

Trainees are intrigued at the "magic" involved, and soon are playing the age game and practicing addition without realizing the drill involved.

Brain Teasers, though fairly expensive, are an excellent device. This commercially prepared set of transparencies (3M) are overlays used to throw on a screen from an overhead projector different kinds of pictures for identification practice. Types of materials include geometric shapes, unusual means of incorporating numbers in heads and other shapes, and a considerable variety of other materials. Brain Teasers are especially good to break the regular routine, or to provide change in type of activity.

Timed competition is enjoyable to most trainees if it is presented as a game type of activity. Here a specified time is stated with the explanation, "Let's see who can work correctly in_____ minutes the most problems on page_____of the workbook."

These games have been suggested for learning through fun activities. Any instructor can add to this list from personal class experiences or by using some originality in adapting other games, TV programs, etc. to the training situation.

THE READING ROOM

A few training programs have provided a reading room, (a sort of library or reference room) for use by both instructors and trainees. Here are kept books and journals for professional reading, curriculum materials, instructional materials not currently in use, and enrichment books for student reading and/or checkout. Though a reading room may not currently be a part of many training facilities, it has much value to recommend it not only for Basic-Remedial Education instructors and trainees but for those involved in occupational training as well.

If allowed to browse in the reading room on their own, trainees soon find something to interest them. In some cases the outcome is reading for enrichment. Though numerous books qualify for an enrichment list, nevertheless the background and interests of the trainee dictate the selection of the volumes. Interest areas of greatest appeal seem to include recipe books, mysteries, adult romances, non-historical biography, trade-related books, song books and music oriented stories, poetry, and books on etiquette and manners, humor, marriage, and marriage problems. Due to the variation of trainee type from project to project, any list compiled probably would be inadequate for use other than locally. For this reason the following is merely a suggested list of enrichment materials.

SOME SUGGESTED ENRICHMENT MATERIALS

Barclay, Lillian. Functional English. Austin: Steck-Vaughn Co., 1957.

Borrow, Daniel G. Basic Mathematics. Chicago: Temac Programmed Materials, Encyclopaedia Britannica Press, Inc., 1962.

Borrow, Daniel G. Basic Mathematics - Measurement. Chicago: Temac Programmed Materials, Encyclopaedia Britannica Press Inc., 1963.

Coleman, James C. The Deep-Sea Adventure Series. San Francisco: Harr Wagner.

1. The Sea Hunt
2. Treasure Under The Sea
3. Submarine Rescue
4. The Pearl Divers
5. Frogmen in Action
6. Danger Below
7. Whale Hunt
8. Rocket Divers

Curtis, Edward B. Plane Geometry. Chicago: Temac Programmed Material, Encyclopaedia Britannica Press, 1964.

Davis, Nettie Stewart, and Terrio, Bonnie Foster. Applied Mathematics For Girls. Milwaukee: The Bruce Publishing Co., 1963.

Educational Division. Reader's Digest Service, Inc., Pleasantville: Reader's Digest Skill Builders.

Encyclopaedia Britannica Press. Literary Sampler. Learning Materials, Inc., 1962.

Encyclopaedia Britannica Press. Literary Sampler Jr. Learning Materials, Inc., 1962.

Felker, C. A. Shop Mathematics, Milwaukee: The Bruce Publishing Co., 1959.

Field Enterprises Educational Corp. World Book Dictionary. Chicago: 1966 Edition, Copyright 1965.

Field Enterprises Educational Corp. World Book Encyclopaedia. Chicago: 1966 Edition, Copyright, 1965.

General Programmed Teaching Corp. Preparing For Algebra. Chicago: Kingston House, Encyclopaedia Britannica Press, Inc., 1964.

Encyclopaedia Britannica Press. The Great Lives Series. Chicago:

1. Theodore Roosevelt
2. Walter Reed
3. Robert Frost
4. Auguste & Jacques Piccard
5. John Marshall
6. Luther Burbank
7. Captain Edward L. Beach
8. Babe Didrickson Zaharias
9. Frank Lloyd Wright

10. P. T. Barnum
11. Queen Elizabeth
12. Ernest Hemingway
13. Leonard Bernstein
14. A. P. Giannini

Grizzard, Mabel Y. Language Exercises (Blue Book). Austin: Steck-Vaughn Co., 1965.

Grizzard, Mabel Y. Language Exercises (Red Book). Austin: Steck-Vaughn Co., 1965.

Grove, Ethel L., Mullikin, Anne M., Grove, Ewart L. Basic Mathematics. Atlanta: American Book Co., 1961.

Hancock, Dee D. From A to Z. Austin: Steck-Vaughn Co., 1966.

Hart, Walter W., Schult, Vergl, and Irvin, Lee. Mathematics In Daily Use. Boston: D. C. Heath and Company, 1961.

Heffernan, Helen. The Reading-Motivated Series. San Francisco: Harr Wagner.
1. Desert Treasure
2. The Mysterious Swamp Rider
3. The Secret of Lonesome Valley

Herber, Harold L. Learning Your Language. Chicago: Follett Publishing Co., 1964 - Series with 18 books per set.

Hoff, Carol. They Served America. Austin: The Steck-Vaughn Company, 1966.

Johnson, James F. Applied Mathematics. Milwaukee: The Bruce Publishing Co., 1965.

Knott, Bill. They Work and Serve. Austin: Steck-Vaughn Company, 1967.

Lazar, Nathan. Verbal Problems in Algebra. Chicago: Temac Programmed Materials, Encyclopaedia Britannica Press, 1962.

Leonard, Rhonda, and Briscue, William S. Wildlife Adventure Series. San Francisco: Harr Wagner.
1. Gatie the Alligator
2. Steeky the Otter
3. Skipper the Dolphin
4. Tawny the Moutain Lion

McNelly, A. E., Adams, L. J., Milton C. Business and Consumer Arithmetic. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1964.

Murphy, Daniel P. First Year Algebra. Chicago: Temac Programmed Materials, Encyclopaedia Britannica Press, 1964.

O'Conner, Grace. Helping Your Children. Austin: Steck-Vaughn Co., 1966.

Olivo, Thomas C. Basic Mathematics Simplified. Albany: Delmar Publishers Inc., 1963.

Olsen, Jim. Step Up Your Reading. New York: McGraw-Hill Book Co., 1966.
Power Series - Book A
" " - Book B
" " - Book C
" " - Book D
" " - Book E

Osborn, Jesse, Hazelmae, Colestock. Mathematics For Daily Needs. Atlanta: Webster Publishing Co., 1954, 1960.

Phono-Word Wheels. Austin: Steck-Vaughn Co.

Portwood, Thomas B., and Portwood, Mary E. Our United States. Austin: Steck-Vaughn Co., 1955.

Putnam, Mildred. Working With Word Patterns. Austin: Steck-Vaughn Co., 1967.

Rambeau, John and Rambeau, Nancy. The Jim Forest Readers. San Francisco: Harr Wagner
1. Jim Forest and Ranger Don
2. Jim Forest and The Bandits
3. Jim Forest & The Mystery Hunter
4. Jim Forest and Dead Man's Peak
5. Jim Forest & The Flood
6. Jim Forest & Lone Wolf Gulch

Rambeau, John and Rambeau, Nancy. Morgan Bay Mysteries. San Francisco: Harr Wagner.
1. The Mystery of Morgan Castle
2. The Mystery of The Marble Angel
3. The Mystery of The Midnight Visitor
4. The Mystery of The Missing Marlin

Robertson, M. S. Learning & Writing English. Austin: Steck-Vaughn Co., 1964.

Smith, Edwin H. My Country. Austin: Steck-Vaughn Co., 1964.

Smith, James A. Arithmetic of The Whole Numbers. Chicago: Temac Programmed Learning Materials, Encyclopaedia Britannica Press, 1964.

Smith, James A. Modern Mathematics for Junior High School. Chicago: Temac Programmed Learning Materials, Encyclopaedia Britannica Press, 1964.

Smith, James A. Whole Numbers and Numerals. Chicago: Temac Programmed Learning Materials, Encyclopaedia Britannica Press, 1964.

Smith, Wilbert. I Want to Learn English. Austin: Steck-Vaughn Co., 1965.

Thurstone, Thelma Gwinn. General RFU Reading For Understanding. Chicago: Science Research Associates Inc., 1959.

Tincher, Ethel. Success in Language. Chicago: Follett Publishing Co., 1964. (Series with 18 titles per set)

Titieu, Robert J. Second Year Algebra. Chicago: Temac Programmed Material Encyclopaedia Britannica Press, 1964.

Turner - Livingston Reading Series. New York: Follett Publishing Co., 1962.
   1. The Person You Are
   2. The Money You Spend
   3. The Family You Belong To
   4. The Jobs You Get
   5. The Friends You Make
   6. The Town You Live In

Upton, Clifford B. and Fuller, Kenneth G. American Arithmetic. Atlanta: American Book Co., 1960.

Varnado, Jewel. English Essentials. Austin: Steck-Vaughn Co., 1964.

Webster Division, McGraw-Hill Book Co., St. Louis: 1966, 1967.
   1. Charlie the TV Repairman
   2. Cool It, Man! (Refrigerator Repairman)
   3. John, the Second Best Cook in Town
   4. Frank the Vending Machine Repairman
   5. Carmen the Beautician
   6. Nick the Waiter
   7. Ginny the Office Assistant
   8. Pete the Service Station Attendant
   9. Judy the Waitress
   10. Betty and Her Typewriter
   11. Joe the Salesman
   12. Timo the Draftsman
   13. Phil the File Clerk

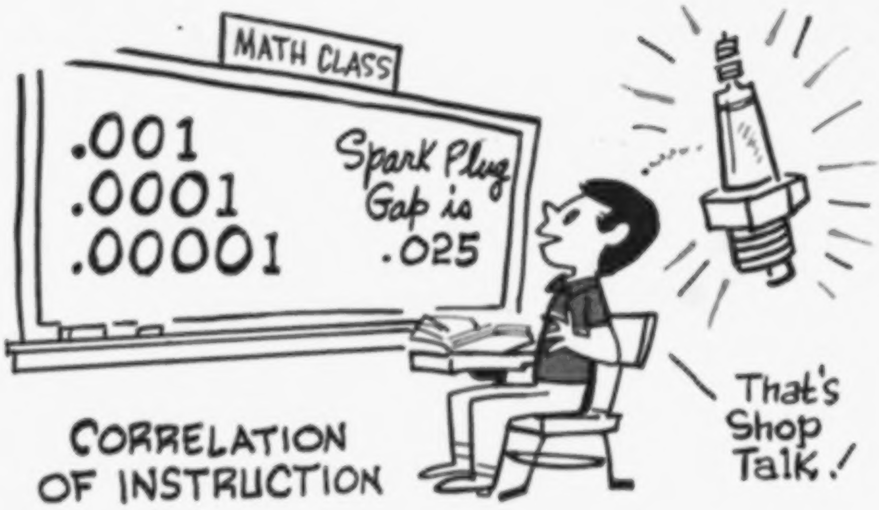
Webster's Seventh New Collegiate Dictionary. Springfield: G. & C. Merriam Co., Publishers, 1963.

Whaley, R. F. Health For Happiness. Austin: Steck-Vaughn Co., 1966.

Woolman, Myron. Reading In High Gear. Chicago: S.R.A., Inc., 1964.

CORRELATION OF INSTRUCTION

Correlation of instruction is a term which refers to reciprocally or mutually oriented teaching. It is implemented through association of facts, situations, procedures, and environment as applied to math, communications, the shop, and trainee life. In MDT programs it refers to the mutual interdependence of Basic-Remedial Education and shop programs as evidenced through meaningful study and activities designed for optimum development of the trainee.



Correlation takes diverse forms, and may be planned or incidental. Unplanned correlation is considered next.

Though not structured for class discussion, shop topics often are introduced into the Basic-Remedial Education group as a carry-over interest from the occupational training. For example, trainees coming from an upholstery shop where fabrics had been under consideration could be so enthusiastic about the subject as to discuss the materials in the first minutes of the communications class. Developmental reading easily can follow. Or, on the other hand, a trainee might bring to math from a machining shop a problem on reading a caliper, or a micrometer, or on figuring tolerances. If the math teacher through study of shop tools and procedures has prepared properly for correlating instruction, amplification of shop teaching on any one of these problems can occur. In general, trainees do not expect such knowledge from Basic-Remedial Education teachers and as a result are especially gratified to learn of their interest. This provides interrelationship or correlation of content and instruction.

Planned correlation is a concerted effort to mesh all training–math, communications, shop, and guidance, in an attempt to develop trainees to a point of acceptability. Because many individuals cannot get or hold a job after occupational training alone, Basic-Remedial Education enters the picture. Usually, however, trainees are not particularly anxious to study in these areas due to unfortunate or unhappy academic school experiences and because they fail to see a need for such training. Probably the best way to "sell" them on the need for math and communications is through correlation with occupational training and everyday activities in which initial interest is higher. It is not enough to know the job. Though job training is the single most important factor in helping the trainee gain employment, Basic-Remedial training enables the individual to hold the job.

To plan and implement correlation of instruction two groups are involved primarily, the instructor and trainees. First of all the instructor should read about the occupations taught in the facility and study the shops, shop procedures, tools, and safety. In short the teacher needs all possible information about the occupational training. Reading is helpful, as is learning to use the shop vocabulary. Shop visits offer a nodding acquaintance with tools, machinery, and some processes, and tend to remove any imaginary barrier existing between the vocational and non-vocational teachers. In this way much is accomplished. Rapport is established between instructor groups, and the Basic-Remedial Education teacher becomes well enough informed to plan for occupational applications.

The trainee is involved in the correlation procedure too through his classroom contributions. In oral presentations encourage discussions or demonstrations of shop work. In writing, late in the project request his evaluation of the physical surroundings, shop, and materials. This is not to suggest critical comments but constructive suggestions. Other written practice may include trainee attitudes toward safety, use of machines, and even the instructor. Sharing these evaluations with shop instructors offers

It might just work!
It's worth a try!
BUZZ SESSIONS

opportunity for increased shop knowledge and personal harmony. Too in this way the shop teacher may receive added insight to trainee problems and background.

Further instructional correlation may be implemented through a list of trade terms used for reading and spelling practice and in vocabulary drill. Also the Basic-Remedial Education instructor can make available to the trainee supplementary reading materials in the various trade areas. Classified lists of trade terms are included in the Appendix.

Some other specific examples may further clarify ways to correlate Basic-Remedial Education and shop programs neither of which can be self-contained or fully separated from the other. In math the instructor should plan to use shop problems suggested by the occupational teacher and particularly when they are applicable to current shop training. In writing, the trainee may write orders, gas tickets, and estimate jobs. A waiter-waitress group may both read and copy recipes and grocery orders. Nearly all shop groups use instruction manuals of one kind or another, and these offer additional material for reading and comprehension. Listening skills are of inestimable value for the individual who must follow verbal instructions of the type given in the shop and on the job. For example, the waitress must be able to write legibly so the cooks can determine if she has written "beer" or "beans," "corn" or "kraut" on the ticket turned in to the kitchen.

The importance of correlating instruction cannot be overemphasized, for Basic-Remedial Education and shop training must be interdependent to be of the greatest value in the development of the trainee.

RELATED INSTRUCTION

In MDT programs related instruction refers to presentation of content which has meaningful reference to the occupation and/or the trainee. It should be of a kind for which a logical or causal connection can be shown and of an aspect or quality which can be predicated on two or more parts taken together. Too, related instruction has a connection with or a dependence upon personal or occupational development and training.

Related instruction may take several forms, but in nearly all instances is closely akin to the trainee and the shop training. "Safety," a topic considered early in most programs, is concerned with the well-being of the worker in reference to the shop machinery and good housekeeping. It is a subject studied to prevent bodily harm to the trainee, and is closely allied to both the adult and his occupational preparation. Reading safety manuals also offers an opportunity for related teaching.

For those enrolled in a Farmer General project, the study of record and record-keeping is valuable. Because books must be kept on milk production, grain produced, livestock, and other similar enterprises there is a direct application of this type of instruction to farming procedures and effort. The math instructor can make use of actual on-the-farm problems as a means of relating math and the occupational training.

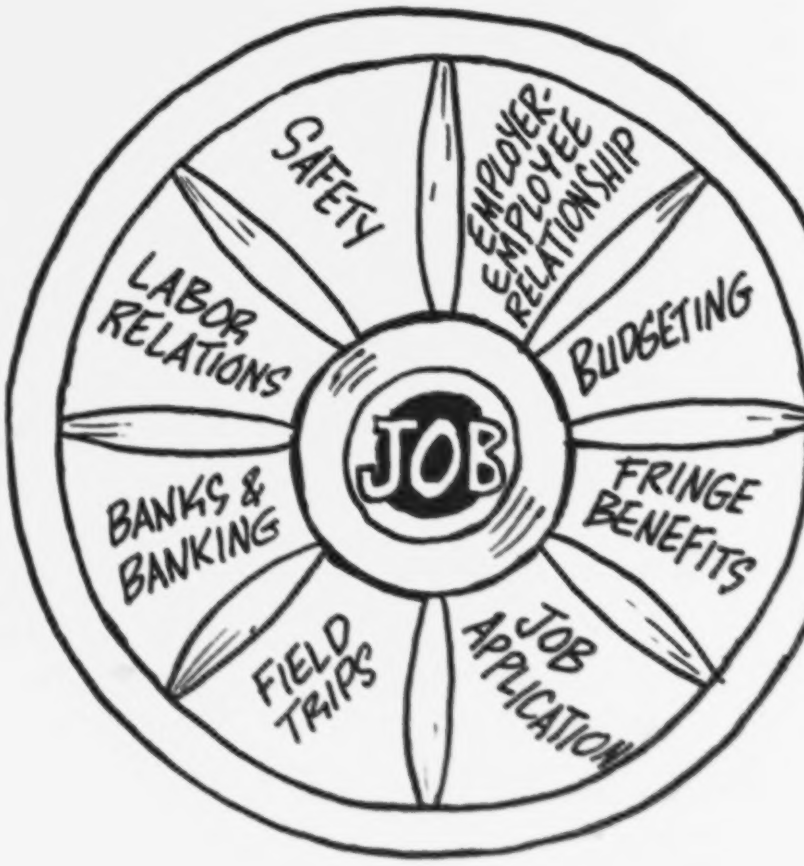
The automobile mechanic learns how to repair parts of vehicles but he may also study through related instruction about rubber production and the structure of tires, the relative strength of metals, and machining tolerances. These topics may be used in math as applications of computational facility, or in reading for related study enrichment, and interest.

In Basic-Remedial Education, opportunities for related instruction are innumerable. Included may be reading lessons for the upholsterer trainee about periods of furniture, the way fabrics are woven and patterned, or color and color schemes. For other trainees occupational training may be emphasized and related through spelling, writing, and vocabulary drill on trade terms. Oral presentations may be used for demonstrations or to explain shop procedures to others in the Basic-Remedial Education class.

Writing letters, job queries, job applications, and practicing for the job interview are other suggestions for use by the Basic-Remedial Education instructor as a means of relating instruction. With some thought and frequent consultations with the shop teachers many other ways will be suggested.

Participation of individuals qualified in certain business and professional work can be invaluable to improvement of trainee background and cultural growth. Basic-Remedial instructors may invite lawyers, accountants, transportation experts, bankers, and others to broaden the instruction they have provided to trainees in related studies. For citizenship training the mayor, a senator, judge, sheriff, and highway patrolman can offer practical information and case histories to spark interest and to stimulate concern in public affairs.

The Appendix includes a section on trade terms listed for several occupations, for use as related instruction by the Basic-Remedial Education teacher. He and the shop instructor together can compile lists for other occupations not included herein.



SUMMARY

Instruction should progress sequentially from the beginning to the end of the project. At best, time is short to develop the trainee into a qualified job applicant. As a result carefully made plans must be implemented for desirable class organization through one of three approaches–group, independent, or individual, or a combination of these. For the MDT trainee it is suggested that emphasis be placed on individualized instruction as probably the best approach for optimum development in a short time span. Assignment sheets offer one desirable means of implementing teaching on the individual basis.

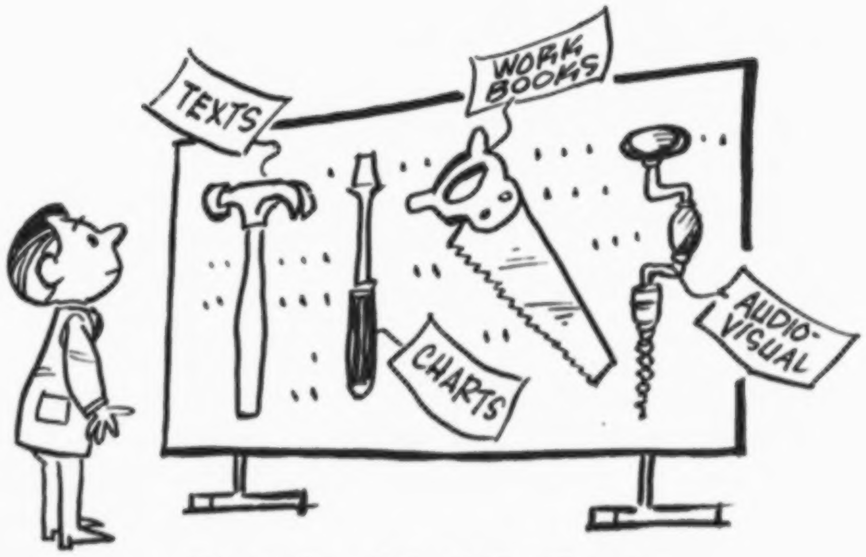
Since many trainees have been bored with a more or less prosaic approach, MDT programs suggest fun activities as a means to help learning be pleasurable, and as a result easier.

For all trainees, but especially for those moving forward through self-development, reading for enrichment should be encouraged. The reading room offers a focus for this type of progression.

CHAPTER VIII

INSTRUCTIONAL MATERIALS AND AIDS

The term, instructional materials and aids, is all-inclusive in that it spreads over an expanse of texts, workbooks, charts, machines and associated materials as well as aids of other kinds. In fact it may be considered a name which covers all auxiliary and/or instructional devices used in the teaching process for presentation of knowledge or to give help, assistance, or support to it.



TOOLS OF THE TRADE

Instructional materials prove useful to impart information and ideas, to inspire changed attitudes, understanding, appreciations, and to broaden interests. To achieve these purposes they should fill a need, be educationally sound, and have application to real life situations or the occupation, or in some other way be of content with special interest to the adult group.

Basic-Remedial Education classes need a wide variety of instructional adjuncts. Among them are the time-honored, tried-and-tested chalk board, posters, bulletin boards, field trips, maps, and models. Some others include the machines and their associated films, filmstrips, transparencies, tapes, records, and commercial and teacher-made aids. All or some of these are essential to the modern Basic-Remedial Education instructor who uses them to present lessons of a breadth and depth impossible otherwise.

Math, which to many individuals is something abstract and apart, can be made logical and meaningful through wisely chosen instructional materials. Particularly is this true for the MDT trainee who learns best by sight and sound applied through "doing," rather than from "telling." Through visual representations, films, models, and drawings, he joins thoughts and real situations by transition from past experiences. This points out the value of instructional aids to present new ideas.

Some teachers use aids effectively while others do not. Even worse still others fail to use them at all. To be effectual the aid must be both adequate and appropriate. It must be large and simple enough to be seen easily but not so simple as to be boring.

The term "instructional materials" seems to carry the connotation of including texts, workbooks, films, and filmstrips which often are produced commercially to go together. On the other hand the term "instructional aid" as commonly used seems to include the adjuncts to these, or such items as models, kits, learning games, teacher-made devices and others. For the purpose of classification, however, all instructional materials and aids may be assembled in three groups: (1) written materials; (2) audio-visual aids; (3) models, manipulative materials, and assorted aids. A consideration of each group follows in some detail.

INSTRUCTIONAL MATERIALS

Basic-Remedial Education texts and workbooks written on the adult level and for adult interests are relatively few in number. Even so the new instructor may experience some bewilderment over the variety of materials presented by publishers' representatives. For this reason some criteria are presented to assist in the evaluation of those materials suited to the special needs of MDT trainees.

WRITTEN MATERIALS
AUDIO-VISUAL
REPORTS
MODELS
ASSORTED AIDS
MANIPULATIVE MATERIALS
WORK LOAD
LIGHTEN THE LOAD

The general format is important. The print should be large enough to be easily read but not so large as to reflect the idea that the content is for the beginner. The book should be of a shape and size conducive to easy handling, and bound securely to open flat. This applies particularly to workbooks to be used over a relatively long time span. The cover should be durable and have eye appeal. However, adult trainees seem not to like three- and four-color cover designs made up of pictures, preferring instead tone-on-tone, or simple black, blue, red, or green-on-white combinations which imply more adult reading matter. Likewise in texts illustrations which represent adult interests appeal the most.

Texts and workbooks with no indication of grade on the cover are accepted without question and are enjoyed as long as trainees are unaware of the level. This is especially true of adult materials needed for the Beginning group for trainee pride is easily damaged by even a hint that the individual is learning on a beginning level.

The content of materials chosen should be on an interest plane applicable to trainee life at home, in the community, or to occupational training. For communications classes the instructor should seek material having emphasis on function rather than rules and structure. Grammar, parts of speech, and diagramming sentences per se are usually taboo for all MDT trainees other than those enrolled in office occupations projects. Correct usage is easier to acquire by other means. For math search for materials with emphasis on skills, applications, and extensive drills rather than theories and concepts. Simple drawings and illustrations too are preferred over lengthy, involved explanations.

Texts and workbooks need to be selected in sufficient number and for all ability levels so that each trainee may progress individually. Lengthy units of work tend to discourage the trainee who reacts more advantageously to short ones which can be completed in a brief period of time.

Further, content of the materials should be educationally sound, and arranged sequentially to advance the trainee slowly but progressively, urging him to work to his optimum potential. It should stimulate and encourage continued reading and study.

Another feature which needs to be considered in selection of materials for undereducated people includes the style of writing. Short sentences with simple subject and predicate are desirable though variety naturally is recommended. The vocabulary should be suited to the ability and interest of the adults who have a broader background for words than children with a comparable reading level. A conversational style also appeals to adult learners.

At present programmed materials are in wide use. Due to the fact that they have built-in reasoning and evaluating devices they assist both the trainee and the instructor to determine progress. In addition they allow for maximum advancement according to the ability of each student.

A programmed book differs from the usual textbook which is really a series of lectures in print. It has no lecture-type material, and consists almost altogether of questions and answers with an occasional brief sentence of explanation. The trainee as he responds to the question writes the answer in the space provided for it. Since each question is worded to lead to the correct answer, the individual usually responds in the right or expected way. Thus it is easy to learn step-by-step, understanding and knowing more with each advancing and successful answer. Programmed instruction does not replace the teacher but frees him to provide more individual teaching.

Systems, like programmed materials, lead the trainee through a sequential program of self-study. In deciding which system or set of programmed materials to choose consider these questions: (1) How comprehensive is the coverage? (2) Is the cost in line with project allotment? (3) How difficult is it to use? (4) In scope what does the system cover—reading and writing, math, spelling, vocabulary? (5) In what way is emphasis placed on human values and relations in addition to other topics? (6) How much preparation is required of the instructor to present the content?

One should remember that regardless of quality no one system or set of programmed materials is sufficient without supplementary materials. These should be built around the interests and vocation of the trainee.

The materials listed on the next few pages are grouped according to the ability levels for which their use is appropriate. The list enumerates materials which have been tried and found acceptable. Though they proved usable and practical for the adult in the MDT Basic-Remedial Education program there is no intent to suggest that others are undesirable. Also it should be emphasized that materials which one instructor uses successfully another may not find effective.

INSTRUCTIONAL MATERIALS AND AIDS FOR MATHEMATICS

BEGINNING LEVEL

Textbooks:

Brown, John A. Mathematics First Course. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964.

Dalzell, Ralph J., Hobbs, Glenn M., and McKinney, James. Practical Mathematics. Chicago: American Technical Society, 1963.

Murphy, Daniel P. Temac Programmed Learning Materials, Seventh Grade Mathematics. Section one (of Four), U. S. A.: Encyclopedia Britannica Press, 1961, 1962.

Olive, Thomas C. Basic Mathematics Simplified. Albany, N. Y.: Delmar Publishers Inc., 1963.

Rosenberg, Robert R. and Lewis, Harry. Essentials of Business Mathematics. New York: McGraw-Hill Book Co., Inc., 1964.

Saeten, Frankson and Deull. Mathematics, A Basic Course. Bronxville, N. Y.: Cambridge Book Co., Inc., 1964.

Shea, James T. Basic Essentials of Mathematics, Part I. Austin: Steck-Vaughn Co., 1965.

Stein, Edwin I. Refresher Arithmetic. Atlanta: Allyn and Bacon, 1964.

Sullivan. Programmed Math For Adults Book 1-4. New York: McGraw-Hill Book Co., 1965.

Workbooks:

Briggs, Milton. Mathematics Skill Builder. Southwestern Publishing Co., Cincinnati: 1960

Henney, Lee R. Systems For Success, Book I. Chicago: Follett Publishing Co., 1965.

Kraus, Gertrude. Hayes Mastery Arithmetic. Wilkinsburg, Penn.: Hayes School Publishing Co., Inc., 1965.

Mott Adult Reading Center. Basic Numbers 300. Flint, Michigan: Flint-Marc Publishing Co., 1964.

Shea, James T. Working With Numbers, Book 5. Austin: Steck-Vaughn Co., 1957.

Shea, James T. Working With Numbers, Book 6. Austin: Steck-Vaughn Co., 1957

Shea, James T. Working With Numbers. Austin: Steck-Vaughn Co., 1954.

Stein, Edwin I. Refresher Workbook In Arithmetic. Atlanta: Allyn and Bacon, 1965.

Wallace, Mary C. Figure It Out, Book I. Chicago: Follett Publishing Co., 1965.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York, 1962

AR-5 Arithmetic Story Problems, Grade 5
AR-6 Arithmetic Story Problems, Grade 6
AR-FX Arithmetic Number Facts, Grades 1-12
ML-AR Mental Arithmetic, Grades 3-12

Money Management Institute of Household Finance Corporation, Prudential Plaza, Chicago: 1965

A New Look at Budgeting
Focus on Food Dollars
Managing Your Clothing Dollars
Your Money's Worth in Shopping
Your World and Money

Booklets with these filmstrips:

Children's Spending
For Young Moderns
Your Automobile Dollar
Your Budget
Your Clothing Dollar
Your Equipment Dollar
Your Food Dollar
Your Health and Recreation Dollar
Your Home Furnishings' Dollar
Your Savings and Investment Dollar
Your Shelter Dollar
Your Shopping Dollar

INSTRUCTIONAL MATERIALS AND AIDS FOR MATHEMATICS

INTERMEDIATE LEVEL

Textbooks:

Brown, John A. Mathematics, First Course. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964.

Curry, Preston E., Gruber, Joseph, and Piper, Edwin B. Applied Business Arithmetic. Cincinnati: Southwestern Publishing Co., 1959.

Dalzell, Ralph J., Hobbs, Glenn M., and McKinney, James. Practical Mathematics. Chicago: American Technical Society, 1963.

Lehman, Continental Exercises in Arithmetic. Atlanta: The Continental Press Inc.

Murphy, Daniel P. Temac Programmed Learning Materials, Seventh Grade Mathematics, Section Two and Three (of Four). Chicago: Encyclopaedia Britannica Press, 1961.

Olive, Thomas C. Basic Mathematics Simplified. Albany, N. Y.: Delmar Publishers Inc., 1963.

Rosenberg, Robert R. and Lewis, Harry. Essentials of Business Mathematics. New York: McGraw-Hill Book Co., Inc., 1964.

Shea, James T. Basic Essentials of Mathematics, Part I. Austin: Steck-Vaughn Co., 1965.

Stein, Edwin I. Refresher Arithmetic. Atlanta: Allyn and Bacon, Inc., 1964.

Workbooks:

Alves, H. F., Fertsch, L. M., and Matthys, Fred H. The Modern Practice Book in Arithmetic. Austin: Steck-Vaughn Co., 1955.

Briggs, Milton. Mathematics Skill Builder. Cincinnati: Southwestern Publishing Co., 1960.

Kraus, Gertrude. Hayes Mastery Arithmetic. Wilkinsburg, Pa.: Hayes School Publishing Co., Inc., 1965.

Shea, James T. Working With Numbers, Book 5. Austin: Steck-Vaughn Co., 1957.

Shea, James T. Working With Numbers, Book 6. Austin: Steck-Vaughn Co., 1957.

Shea, James T. Working With Numbers. Austin: Steck-Vaughn Co., 1957.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York, 1962.

AR-FX Arithmetic Number Facts, Grades 1-12
AR-5 Arithmetic Story Problems, Grade 5
AR-6 Arithmetic Story Problems, Grade 6
AR-7 Arithmetic Story Problems, Grade 7
GM-BM General Math-Business Math
ML-AR Mental Arithmetic, Grades 3-12

Filmstrip House, 432 Park Ave., N. Y.

Learning New Numbers - Fractions

McGraw-Hill, Princeton-Hightstown Road, Hightstown, New Jersey

Adventures With Numbers
Managing Your Money
Mathematics Series, Set #1
Using Mathematics

Society For Visual Education, Inc., 1345 Diversey Parkway, Chicago, Ill.

Using and Understanding Numbers - Decimals (No. A538-1 through A538-5)

Money Management Institute of Household Finance Corporation, Prudential Plaza, Chicago: 1965.

A New Look at Budgeting
Focus on Food Dollars
Managing Your Clothing Dollars
Your Money's Worth in Shopping
Your World and Money

Booklets with these filmstrips:

Children's Spending
For Young Moderns
Your Automobile Dollar
Your Budget
Your Clothing Dollar
Your Equipment Dollar
Your Food Dollar
Your Health and Recreation Dollar
Your Home Furnishings' Dollar
Your Savings' and Investment Dollar
Your Shelter Dollar
Your Shopping Dollar

INSTRUCTIONAL MATERIALS AND AIDS FOR MATHEMATICS

ADVANCED LEVEL

Textbooks:

Brown, John A. Mathematics, First Course. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964.

Curry, Preston E., Gruber, Joseph, and Piper, Edwin B. Applied Business Arithmetic. Cincinnati: Southwestern Publishing Co., 1959.

Dalzell, Ralph J., Hobbs, Glenn M., and McKinney, James. Practical Mathematics. Chicago: American Technical Society, 1963.

Lehman. Continental Exercises in Arithmetic. Atlanta: The Continental Press Inc.

Murphy, Daniel P. Temac Programmed Learning Materials, Seventh Grade Mathematics, Section Three and Four (of Four). U. S. A.: Encyclopaedia Britannica Press, 1961, 1962.

Olive, Thomas C. Basic Mathematics Simplified. Albany, N. Y. : Delmar Publishers Inc., 1963.

Rosenberg, Robert R. and Lewis, Harry. Essentials of Business Mathematics. New York: McGraw-Hill Book Co., Inc., 1964.

Shea, James T. Basic Essentials of Mathematics, Part II. Austin: Steck-Vaughn Co., 1965.

Stein, Edwin I. Refresher Arithmetic. Atlanta: Allyn and Bacon, 1964.

Workbooks:

Alves, H. F., Fertsch, L. M., and Matthys, Fred H. The Modern Practice Book in Arithmetic. Austin: Steck-Vaughn Co., 1955.

Briggs, Milton. Mathematics Skill Builder. Cincinnati: Southwestern Publishing Co., 1960.

Shea, James T. Working With Numbers. Austin: Steck-Vaughn Co., 1954.

Shea, James T. Algebra, Book One. Austin: Steck-Vaughn Co., 1960.

Stein, Edwin I. Refresher Workbook in Arithmetic. Atlanta: Allyn and Bacon, 1964.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York, 1962.

AR-FX Arithmetic Number Facts, Grades 1-12
AR-6 Arithmetic Story Problems, Grade 6
AR-7 Arithmetic Story Problems, Grade 7
GM-BM General Math-Business Math
ML-AR Mental Arithmetic, Grades 3-12

McGraw-Hill, Princeton-Hightstown Road, Hightstown, New Jersey.

- Adventures With Numbers
- History of Measures
- Managing Your Money
- Mathematics Series
- Ratio and Proportion
- Using Mathematics
- Using The Protractor

Money Management Institute of Household Finance Corporation, Prudential Plaza, Chicago, 1965.

- A New Look at Budgeting
- Focus on Food Dollars
- Managing Your Clothing Dollars
- Your Money's Worth in Shopping
- Your World and Money

Booklets with these filmstrips:

- Children's Spending
- For Young Moderns
- Your Automobile Dollar
- Your Budget
- Your Clothing Dollar
- Your Equipment Dollar
- Your Food Dollar
- Your Health and Recreation Dollar
- Your Home Furnishings' Dollar
- Your Shelter Dollar
- Your Shopping Dollar

INSTRUCTIONAL MATERIALS AND AIDS FOR COMMUNICATIONS

BEGINNING LEVEL

READING AND WRITING

Workbooks and Kits:

Bauer, Josephine, Chicago: Follett Publishing Co., 1966.

Communications 1. Revised. Getting Started
Communications 2. On The Way

Buchanan, Cynthia Dee and Sullivan, Dr. M. W. Programmed Reading for Adults. New York: McGraw-Hill Book Co.

Book 1 - Letters of The Alphabet
Book 2 - The Sounds of The Letters
Book 3 - From Words to Sentences
Book 4 - Sentence Reading

Noble's Handwriting Kit 1. New York: Noble and Noble, Publishers, 1965.

Robertson, M. S. Adult Reader. Austin: Steck-Vaughn Company, 1964.

Smith, Harley A. and Wilbert, Ida Lee King. I Want to Read and Write. Austin: Steck-Vaughn Co., 1965.

Steck-Vaughn Company, Editorial Staff. Steps to Learning, Book 1. Austin: Steck-Vaughn Co., 1965.

Steck-Vaughn Company, Editorial Staff. Steps to Learning, Book 2. Austin: Steck-Vaughn Co., 1965.

Townsend, Rebecca M. Imaginary Line Handwriting, Red Book. Austin: Steck-Vaughn Co., 1954.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

Set - 4C - Readiness - Pictures
Set - 4D - Pre-Primer
Set - 20 - Primary Numbers - Basic Accuracy
Set - 21 - Primary Letters - Basic Accuracy
Set - 22 - Primary Combinations - Basic Accuracy
Set - 30 - Intermediate Numbers - Basic Accuracy
Set - 31 - Intermediate Combinations - Basic Accuracy
Set - 40 - Advanced Combinations - Basic Accuracy - Album 1
Set - 40 - Advanced Combinations - Basic Accuracy - Album 2

Set - C-3 - Comprehension - Power Series

Set - 4-G - Story Sets
Set - 3a - Story Sets

SPELLING

Workbooks and Kits:

Taylor, Stanford E. and Frackenpohl, Helen. Words A. Chicago: Educational Developmental Laboratories, 1961.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

Sp - 23

LISTENING AND SPEAKING

Records:

Assorted Musical Records

My Fair Lady
Swan Lake Series
Carousel
Progressive Jazz Albums
Folk Songs

INSTRUCTIONAL MATERIALS AND AIDS FOR COMMUNICATION

INTERMEDIATE LEVEL

READING AND WRITING

Workbooks and Kits:

Bauer, Josephine, Communications 3. Full Speed Ahead. Chicago: Follett Publishing Co., 1966.

Buchanan, Cynthia Dee and Sullivan, Dr. M. W. Programmed Reading for Adults. New York: McGraw-Hill Book Co.

Book 5 - Paragraph Reading
Book 6 - Consecutive Paragraphs

Leavell, Ullin. New Goals in Reading. Austin: Steck-Vaughn Company, 1960.

Leavell and Via. New Avenues in Reading. Austin: Steck-Vaughn Company, 1966.

Noble's Handwriting Kit 2. New York: Noble & Noble, Publisher, 1965.

Schachter, Norman and Whelan, John K. Activities for Reading Improvement, Book 1. Austin: Steck-Vaughn Company, 1963.

Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois.

SRA Reading Lab. - 111A

Smith, Harley A. and Wilbert, Ida Lee King. How to Read Better, Book 1. Austin: The Steck-Vaughn Company, 1964.

Smith, Harley A. and Wilbert, Ida Lee King. How to Read Better, Book 2. Austin: Steck-Vaughn Company, 1964.

Townsend, Rebecca M. Imaginary Line Handwriting (Blue Book). Austin: Steck-Vaughn Company, 1966.

Townsend, Rebecca M. Beginning Cursive Book. Austin: Steck-Vaughn Company.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

Comprehension Power Series - Set - C-4
Comprehension Power Series - Set - C-5
Story Set - D
Story Set - E
Story Set - F

SPELLING

Workbooks and Kits:

Taylor, Stanford E. and Frackenpohl, Helen. Words B. Chicago: Educational Developmental Laboratories, 1961.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

Sp. - 456

LISTENING AND SPEAKING

Records:

Assorted Musical Records

My Fair Lady
Swan Lake Series
Carousel
Progressive Jazz Albums
Folk Songs

INSTRUCTIONAL MATERIALS AND AIDS FOR COMMUNICATIONS

ADVANCED LEVEL

READING AND WRITING

Workbooks and Kits:

Buchanan, Cynthia Dee and Sullivan, Dr. M. W. Programmed Reading for Adults. New York: McGraw-Hill Book Company.

Book 7 - Content Analysis
Book 8 - Functional Reading

Leavell and Via. New Journeys in Reading. Austin: Steck-Vaughn Co., 1966.

Schachter, Norman and Whelan, John K. Activities for Reading Improvement, Book 2. Austin: Steck-Vaughn Company, 1964.

Schachter, Norman and Whelan, John K. Activities for Reading Improvement, Book 3. Austin: Steck-Vaughn Company, 1964.

Science Research Associates, Inc., 259 East Erie Street, Chicago, Ill.

SRA Reading Lab. 111B

Townsend, Rebecca Mae. Advanced Cursive Book. Austin: Steck-Vaughn Company.

Varnado, Jewel. English Practice for Mastery. Austin: Steck-Vaughn, 1961.

Book 1, 1961
Book 2, 1961
Book 3, 1962
Book 4, 1963

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

Controlled Reading Strips, Story Sets - GH, HG, IJ, JI, KL, LK, MN.

SPELLING

Workbooks and Kits:

Educational Developmental Laboratories, Huntington, New York.

Word Clue, Books G, H, I, J, K, L, M.

Filmstrips:

Educational Developmental Laboratories, Huntington, New York.

SP - 789
Voc. - 789
Voc. - 1011
Voc. - 1213

LISTENING AND SPEAKING

Records:

Assorted Musical Records

My Fair Lady
Swan Lake Series
Carousel
Progressive Jazz Albums
Folk Songs

Tapes:

Educational Developmental Laboratories

Listen and Read Tapes - GL, MP.

AUDIO-VISUAL AIDS

To provide appeal to the MDT trainee real effort must be exerted to provide dramatic, exciting, and innovative instruction. Audio-visual aids assist the teacher in this respect by affording almost unlimited variety for content presentation.

As has been indicated earlier, learning occurs most effectively through two of the five senses, sight and hearing. This is not a new concept in Basic-Remedial Education but one which has expanded in appeal and is now implemented to a large extent through audio-visual aids. For use in this handbook, these are considered as mechanical devices and their accessories used for showing, telling, and listening, as a means of improving instruction.

Why is the audio-visual aid so highly regarded? As a way to vary the usual method of instruction it offers the advantage of holding the interest and attention of the trainee. For those with poor comprehension the picture provides a sort of universal language more easily understood than words and assists in understanding when used in conjunction with listening. Since films, filmstrips, tapes, and movie reels can be rerun quickly and with little effort, repetition which improves retention of knowledge is easily and quickly provided.

On the other hand, how mechanized should the classroom be? Every device known could be placed in a room, but unless used effectively by the instructor would have little value. Certainly mechanical and electronic teaching devices are practical as one answer to the problem of individual differences in group situations. Films offer pictures and information the instructor would have difficulty in collecting otherwise.

Slow learners usually can learn to operate mechanical-electronic devices with ease, and enjoy the opportunity to improve performance through use of them. Some are so fascinated with just the operation of a device that though operating it is the main interest, they learn incidentally and without realizing it.

The mechanized classroom emphasizes the value of nonverbal learning but in no way lessens the need for developing verbal proficiency. Also, nonverbal media offer some kinds of experiences which help to give meaning and a sort of transition to more abstract learning.

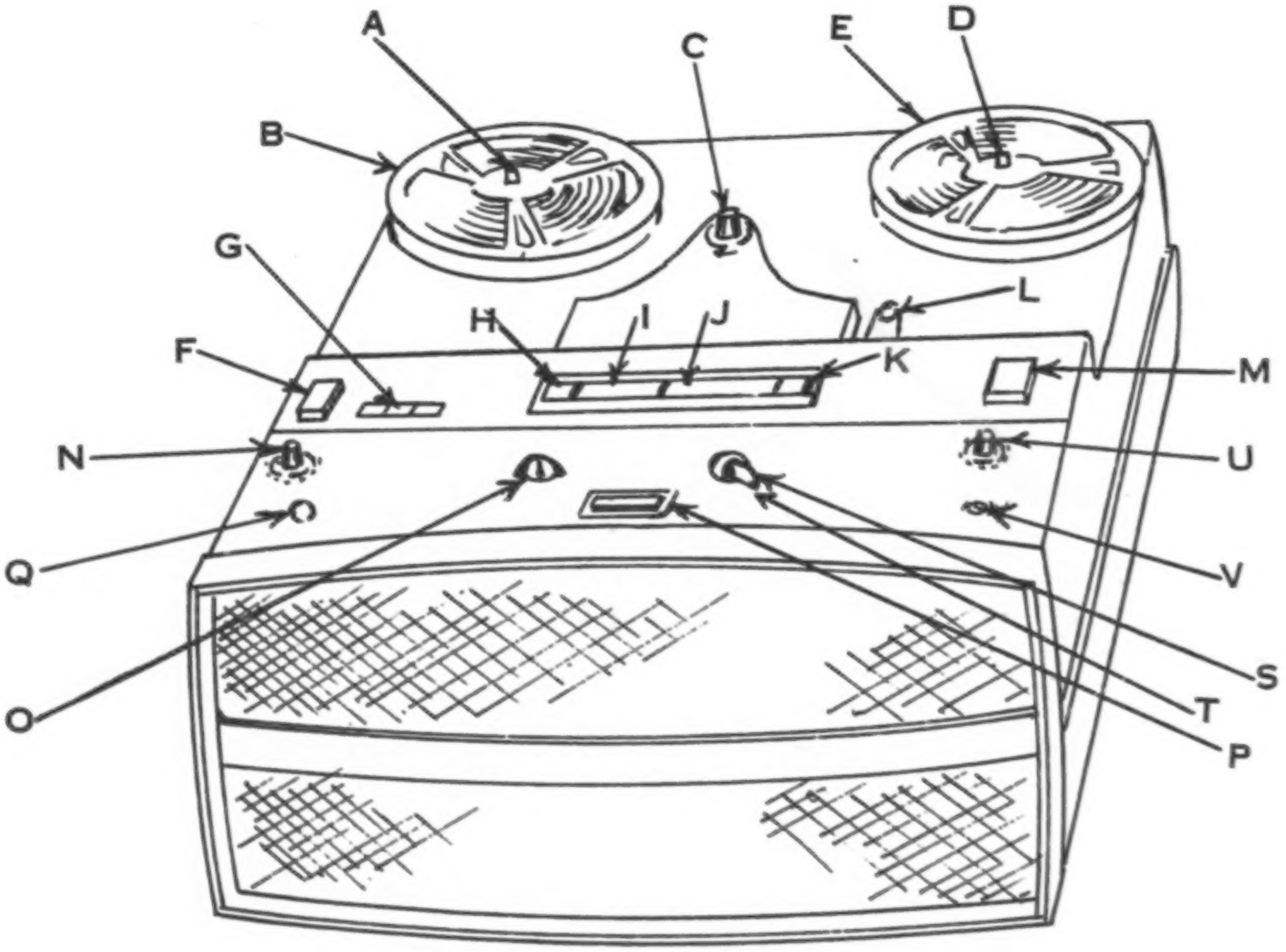
From the points of view discussed, the mechanized classroom, designed and equipped with innovations for learning (movie projectors, recorders, reading machines, and others), helps meet the needs of the kinds of learning developed in MDT Basic-Remedial Education programs. Certainly for any group, audio-visual devices extend the dimensions of possible learning.

In spite of the advantages mentioned it is not unusual for the benefits of audio-visual equipment to be diminished through failure of the instructor to present the educational message properly. If learning does not occur the teacher may have failed (1) to prepare the group for what they were to see; (2) to followup with explanation, a question and answer period, or group discussion; (3) to provide pre-study and understanding of terminology; and (4) to preview material himself. A little planning by the instructor provides the maximum benefits expected.

Educational and closed circuit television while not in common use in MDT Basic-Remedial programs offer untold possibilities as a supplementary means of instruction in specialized units of work. Via closed circuit TV a Basic-Remedial Education class could watch demonstrations such as (1) the basic welds in a welding program; (2) inserting a welt cord in the covering of a footstool; (3) carving a roast; (4) joinery in a millman program; and similar interesting and instructive lessons relating to other occupations. Closed circuit TV could offer opportunity for new instructors to study methodology of teachers experienced in individualized instruction. No doubt in the future television will become a more commonly used audio-visual aid.

The teletrainer is an ingenious device developed to instruct in regard to acceptable telephone procedures and manners. Trainees enjoy using it and learn readily from practice with it.

The mechanical-electronic devices generally considered of greatest value in the MDT Basic-Remedial classroom are: (1) tape recorder; (2) sound filmstrip projector; (3) movie projector (either automatic or manually threaded); (4) overhead projector; (5) Controlled Reader; (6) Controlled Reader, Junior; (7) Math Builder or Math Mate; (8) tachistoscope (Tach-X); (9) opaque projector; (10) teletrainer. It goes without saying that the instructor needs complete operational facility for each machine to use it effectively, and must be familiar with the films, filmstrips, and tapes available for each. Since the incoming Basic-Remedial Education instructor may not have had these devices in prior traditional teaching experience, an effort is made in the material on the following pages to offer assistance. With regard to each piece of equipment the purpose is stated, and the operational procedure is identified and itemized sequentially. The instructor should practice all phases of operation before attempting any class use.



TAPE RECORDER

KEY

A. Supply reel spindle
B. Supply reel
C. Tape speed knob
D. Take-up reel spindle
E. Take-up reel
F. Pause switch
G. Counter
H. Rewind button
I. Stop button
J. Play/record button
K. Forward button
L. Automatic shut-off post
M. Monitor switch
N. Off/treble control
O. Base control
P. Recording volume level indicator

Q. Monitor receptacle
R. Record position
S. Record/play lever
T. Play position
U. Loudness control
V. Microphone receptacle

INSTRUCTION SHEET

TAPE RECORDER

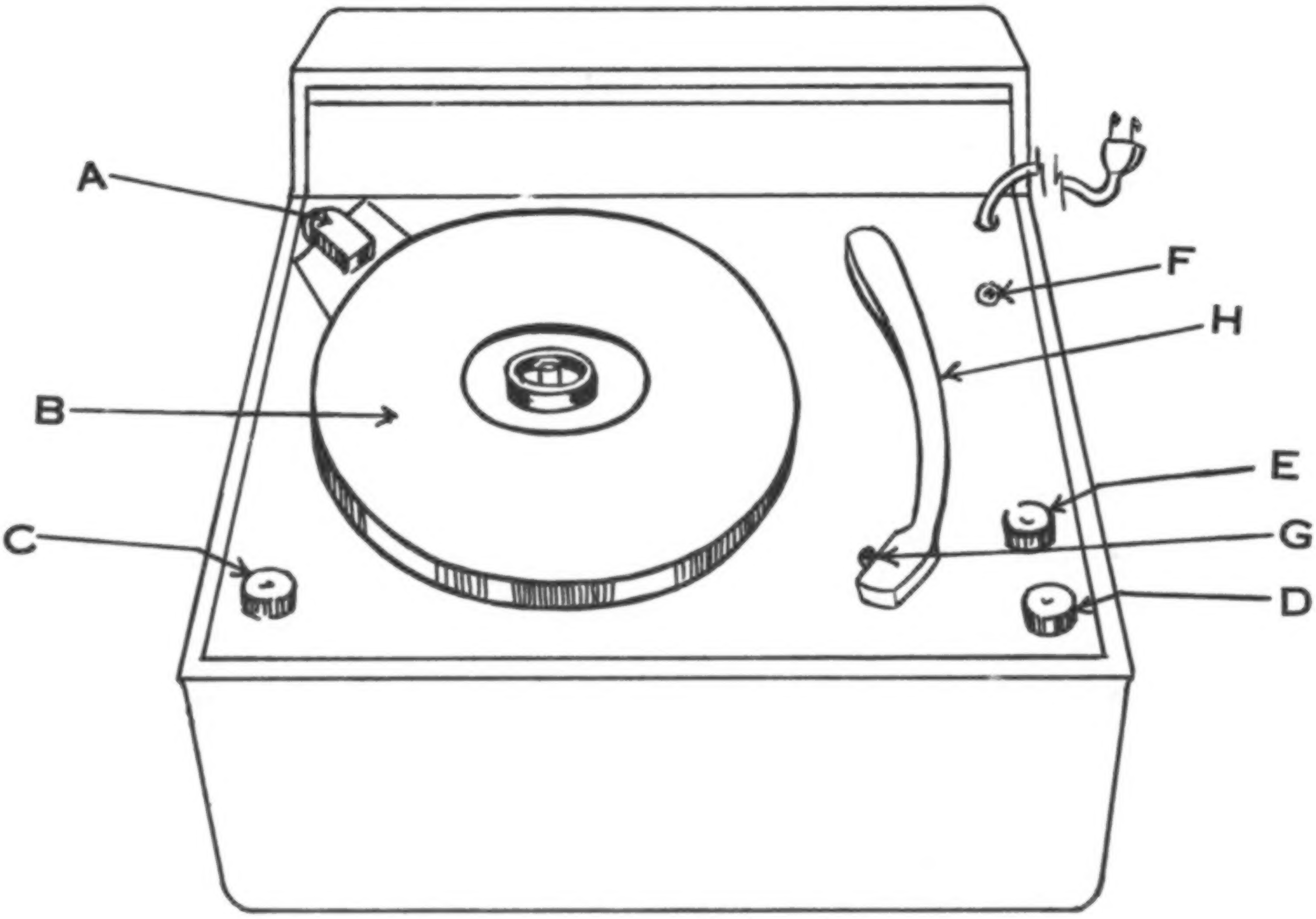
The purpose of the tape recorder in Communications is to achieve continued growth in listening ability, to promote critical thinking, to help develop an appreciation of literary forms, both oral and written and to better understand what is heard and read, and as an aid in correcting speech deficiencies.

OPERATIONAL PROCEDURES:

I. How to Record
  A. Remove the lid of the recorder; make sure the STOP button is depressed. Depress the STOP button when loading the recorder with tape and when the recorder is not in use.
  B. Plug the power cord in to receptacle at the rear of the case.
  C. Turn the OFF/treble control clockwise.
  D. Place on the Take-up reel spindle, and empty Take-Up Reel with Side One up.
  E. Place on the Supply Reel Spindle, a full Supply Reel of tape, again with Side One up.
  F. Gently draw about 18 in. of the tape from Supply Reel. Grasp between thumb and index fingers of both hands with shiny side of tape to the front of the recorder. Hold the tape in a taut straight line and lower it into the gap just behind the push buttons.
  G. Bring tape up to the Take-UP Reel. Insert the tape into the slot in the center of the reel. Bend the tape over the slot; hold your finger on it and turn the reel counter clockwise until layers of tape hold securely.
  H. Insert microphone into slot provided.
  I. Turn the Tape Speed Knob always in a clockwise direction, to the desired speed for recording.
  J. Hold "Record-Play" lever in "Record" position and depress the "Record-Play" button.

Remember - None of the control buttons will function until the Stop Button is depressed.

II. How to Play Back Recorded Tape
  A. Thread the tape in the same manner as for recording. Make sure the Tape Speed Knob is set at the speed at which the take is recorded.
  B. Depress the Play-Record Button until a click is heard. Both reels will begin to turn.
  C. Adjust the Loudness Control for suitable listening level. Adjust Bass and OFF/Treble Controls for tonal qualities.
  D. To rewind:
  Depress "Rewind" button when desired position is reached. Depress "STOP" Button.



RECORD PLAYER

KEY

A. Speed selector
B. Turn table
C. Power dial
D. Volume control
E. Tone selector
F. Head set receptacle
G. Needle selector
H. Arm

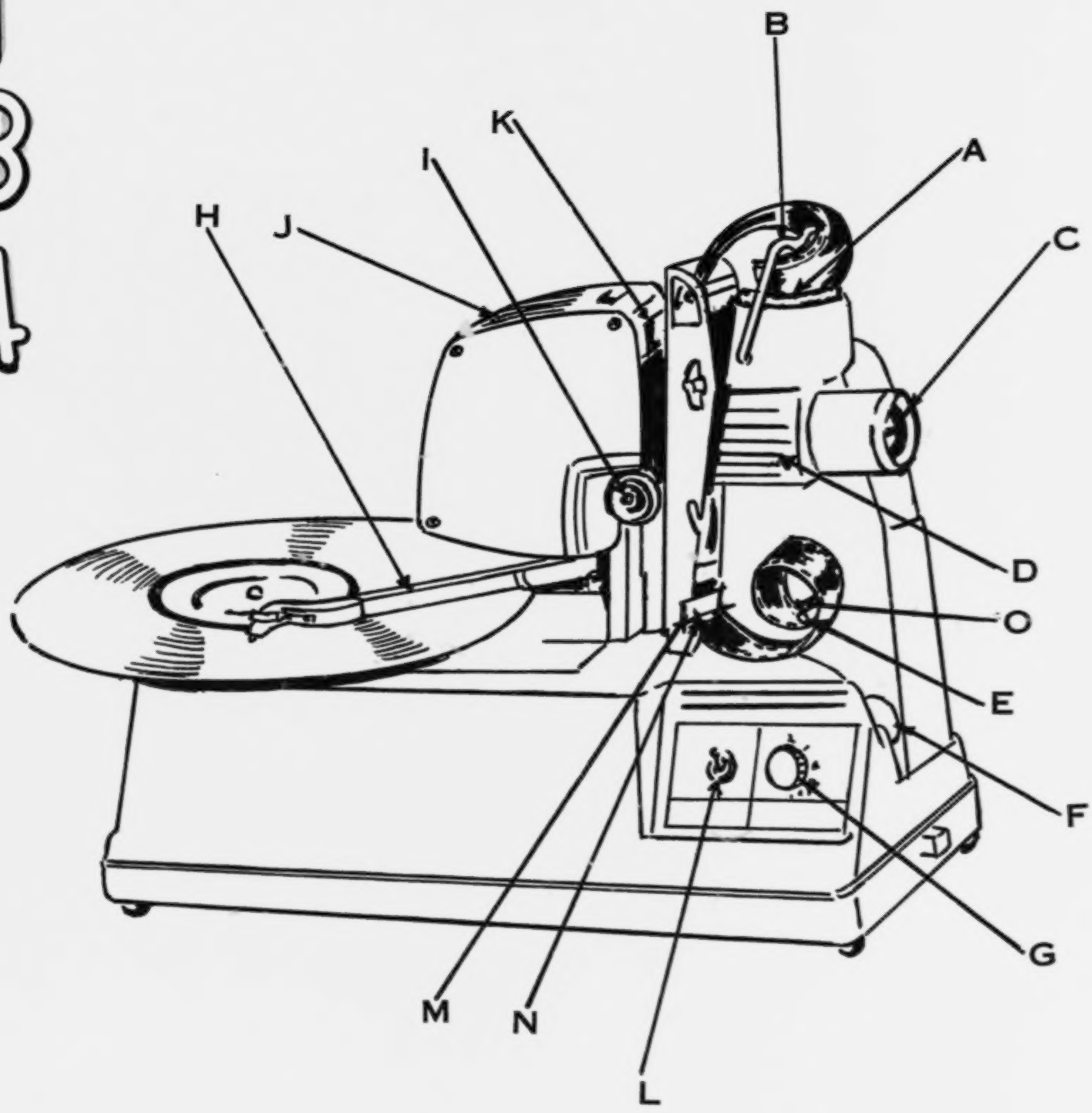
INSTRUCTION SHEET

RECORD PLAYER

The record player serves to reinforce listening skills.

OPERATIONAL PROCEDURES:

1. Plug into a 120 volt 60 cycle AC outlet.
2. Place record on turntable.
3. Select proper speed to be used by recording.
4. Turn power dial to ON position and place needle on disc.
5. Turn volume dial to desired position.
6. Adjust treble-bass dial to desired position.
7. When phonograph is not in use, store. Put plug-in cord in place provided near phonograph arm.



SOUND FILMSTRIP PROJECTOR

KEY

A. Film holder
B. Film guide
C. Projection lens
D. Lens housing
E. Film Take-up spindle
F. Elevating knob
G. Control panel
H. Pick-up arm

I. Framing knob
J. Lamp housing
K. Aperture glass
L. Power switch
M. Film carrier tab
N. Film carrier
O. Spring

3

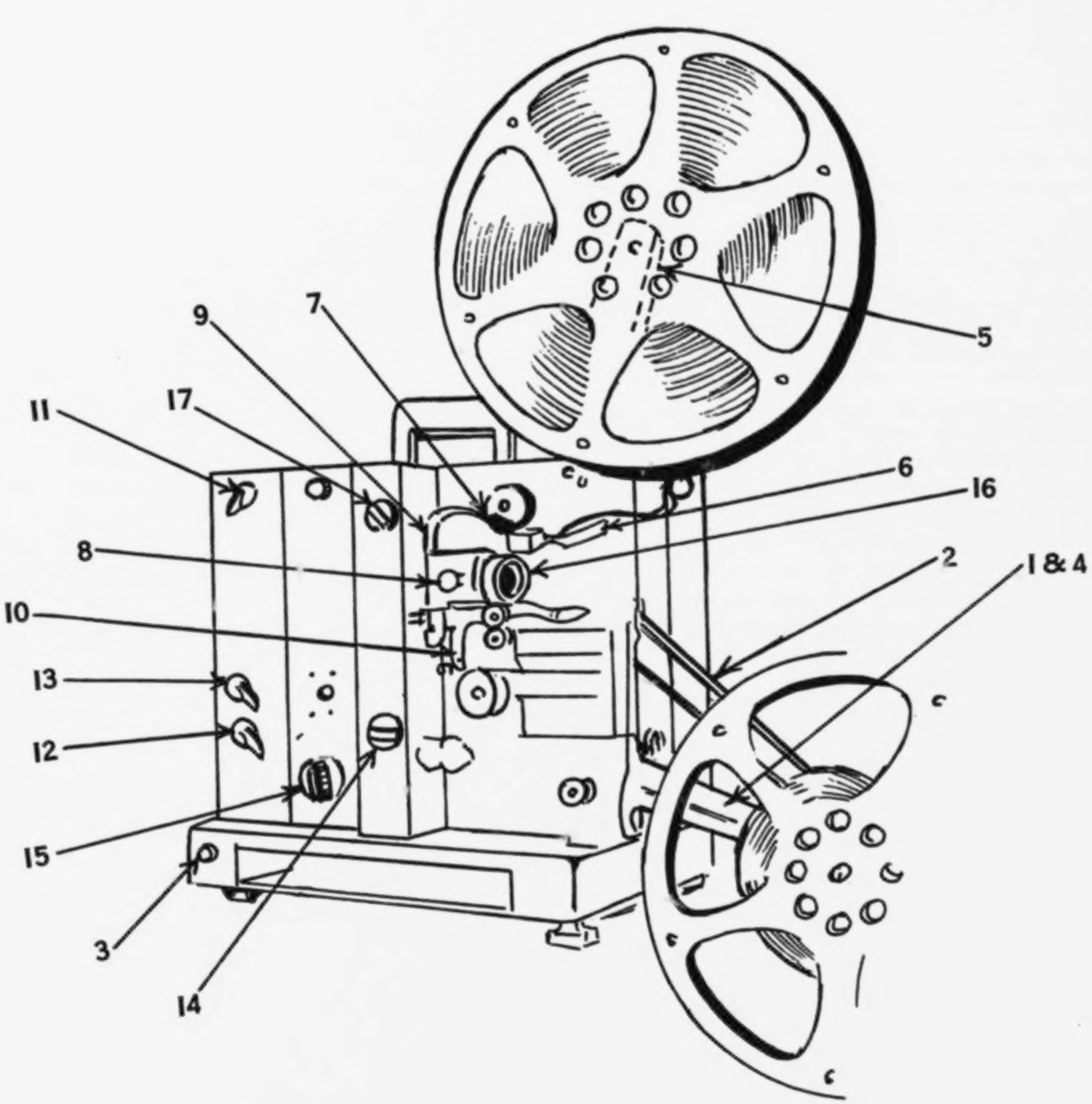
INSTRUCTION SHEET

SOUND FILMSTRIP PROJECTOR

The sound filmstrip projector offers the advantage of a record player and a filmstrip projector which can be used independently or with co-ordinated record and filmstrip.

OPERATIONAL PROCEDURES:

1. Place power switch (L) in fan position and check for fan operation. With fan working, place power switch in lamp position.
2. Pull out projection lens (C) from lens housing (O) until rectangular image of light is sharp on the screen.
3. Adjust position of screen so that light squarely fills the screen. If necessary to tilt projector upward, unlock elevating knob (F) by rotating it counter clockwise one quarter turn. Adjust projector housing to center light on screen. Lock by rotating knob (F) clockwise.
4. Push forward on rear of film carrier (N) until it snaps forward.
5. Select film.
6. With film guide (B) forward, drop film into holder cup (A).
7. Move film guide (B) to rear, as far as it will go. Grasp end of film from inside of roll and pull it over top of film guide.
8. Thread film into carrier (N) until the picture appears on screen.
9. Using film carrier tab (M) snap it to rear and slide lens in and out until focused. Push in knob (I) and turn until picture appears.
10. Insert end of film in take-up (E) by sliding it between the spring (O) and take-up spindle (E).



MOVIE PROJECTOR (MANUALLY THREADED)

KEY

1. Reel arms
2. Spring belts
3. Speaker receptacle
4. Lower arm
5. Upper arm
6. Rewind-Operate lever
7. Upper sprocket shoe
8. Picture gate
9. Upper loop
10. Lower loop
11. Amplifier on-off switch
12. Volume control
13. Tone control
14. Speed selector
15. Rotary switch
16. Projection lens
17. Framing knob

INSTRUCTION SHEET

MOVIE PROJECTOR (MANUALLY THREADED)

Though more time is required to set up and load this projector than the automatic one, ease of loading and film removal are distinct advantages.

OPERATING PROCEDURES:

A. Setting up
  a. Remove the cover and place it near the projection screen.
  b. Fasten the reel arms (1) in place, pull out the spring belts (2) and put them over the pulleys on the arms.

B. Connections
  a. Insert the plug on the speaker cable into the receptacle (3).
  b. Insert the plug on the other end of the speaker cable in the jack on the speaker.

C. Threading
  a. Place an empty reel on the lower reel arm (4) and a reel of film on the upper (5).
  b. Make sure the REWIND-OPERATE lever (6) is in the OPERATE position.
  c. Hold the film about four feet from the end, and press down on the upper sprocket shoe (7).
  d. Slide film under upper sprocket. Make sure sprocket teeth engage sprocket holes. Release sprocket shoe.
  e. Open the picture gate (8), form the upper loop (9), close the picture gate.
  f. Form the lower loop (10) of film below the picture gate.
  g. Follow diagram on base of projector to thread rest of film.
  h. Insert end of film in the hub slot of the lower reel.

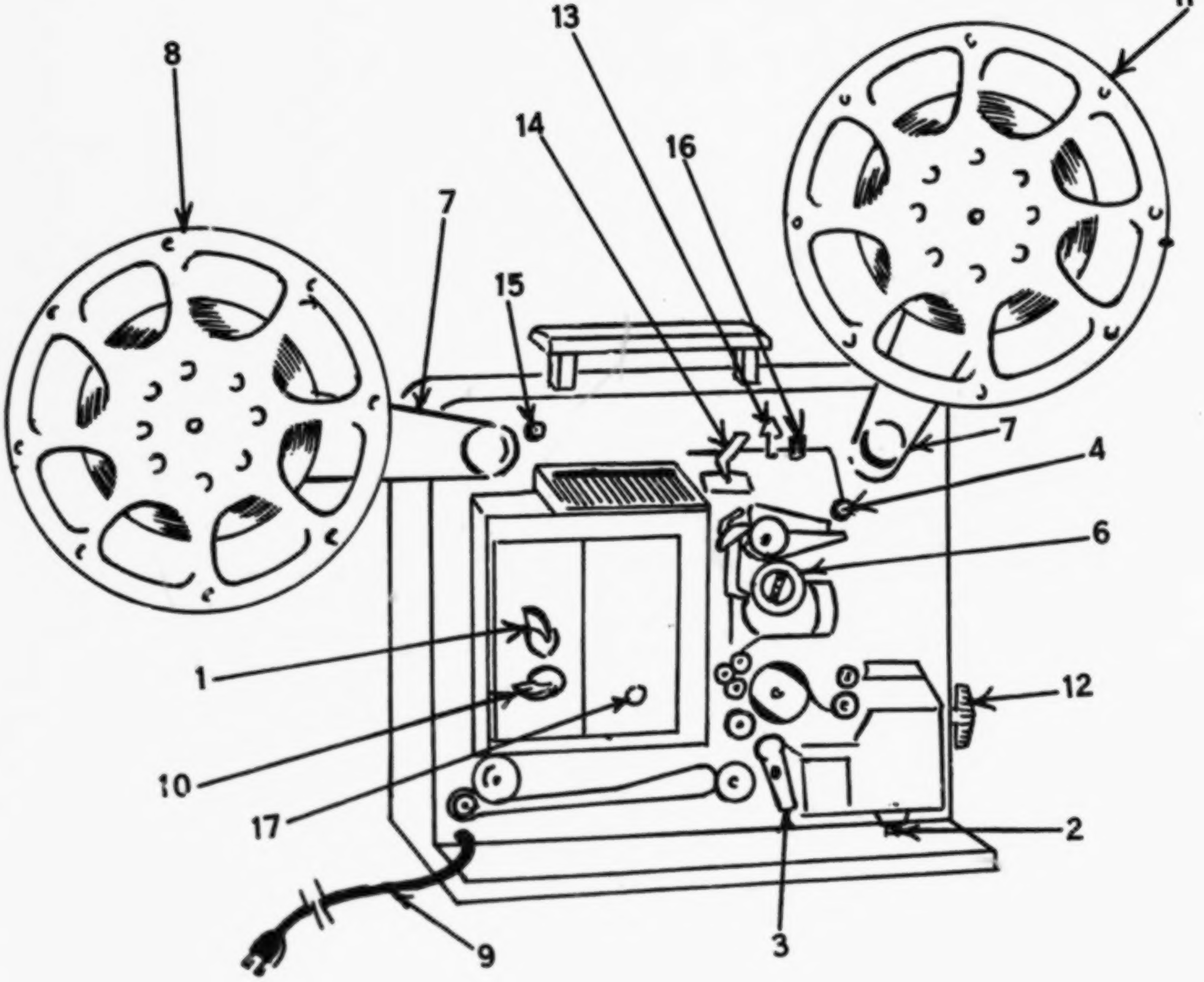
D. Operating
  a. Turn the amplifier on-off switch (11) to ON position.
  b. Turn the VOLUME control (12) to 5, and the TONE control (13) to 5 for normal adjustment.
  c. Turn the SPEED SELECTOR (14) downward to SOUND.
  d. Turn the ROTARY switch (15) clockwise to the LAMP position.
  e. Focus by rotating the projection lens (16).
  f. To frame the picture, turn FRAMING knob (17) to show one complete picture on the screen.

E. Reversing

  Turn the ROTARY switch counter clockwise to the reverse position.

F. Rewinding

  Place the rewind-operate lever on rewind position; attach the film to the upper reel; turn the rotary switch to rewind.



MOVIE PROJECTOR (AUTOMATIC)

KEY

1. Top switch
2. Film end trimmer
3. Autoload lever
4. Threading channel
5. Snubber roller
6. Focus
7. Front reel arm and rear reel arm
8. Empty reel
9. Power cord
10. Volume and tone control
11. Full reel
12. Adjusting knob
13. Framer
14. Silent and sound control
15. Arm release button
16. Rewind button
17. Exciter lamp cover

INSTRUCTION SHEET

MOVIE PROJECTOR (AUTOMATIC)

Though more expensive than the type threaded by hand, this projector will damage film if not operated properly. Some film lending organizations will not loan films if they are to be used on automatic loading projectors. The film is difficult to remove and rewind if stopped half-way through a showing.

The movie projector is used to enrich, review, or demonstrate in action any theory or other material already presented. The projector may be used to introduce a new unit or lesson, to show actual on-the-job situations, or to demonstrate a skill in a trade. By utilizing two senses, sight and sound, it is often more effective than a lecture or other teaching technique.

OPERATIONAL PROCEDURE:

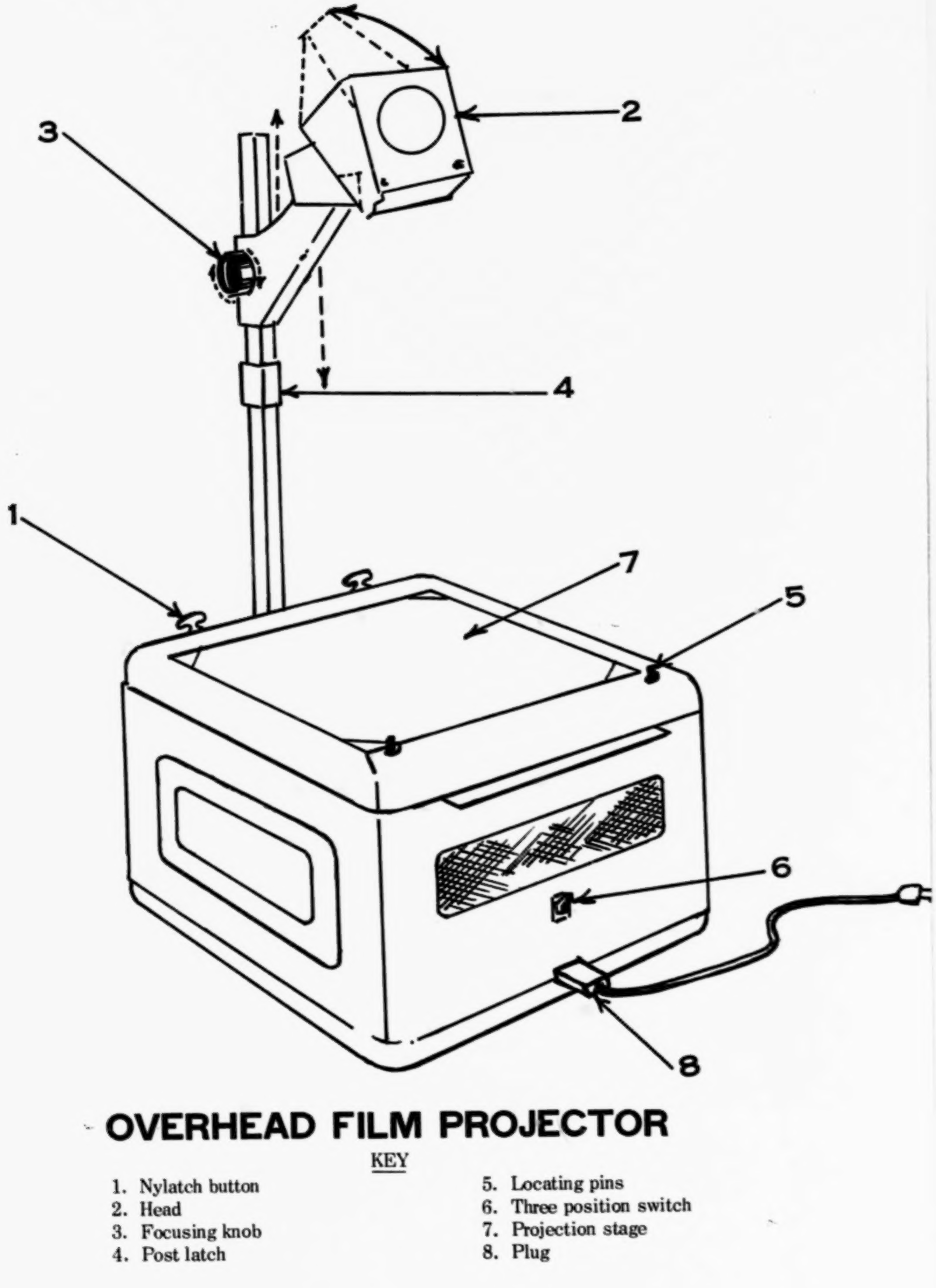
A. Setup
  1. Raise reel arms (7) by depressing arm release button (15).
  2. Position empty reel (8).
  3. Plug in power cord (9) 105-129 volts, 60 cycles only.
  4. Turn on volume control (10).
  5. Position full reel of film (11).
  6. Adjust to screen height (12).

B. Automatic Threading
  1. Turn top switch to forward.
  2. Trim film end at cutter (2).
  3. Move lever to autoload position (3).
  4. Insert film into threading channel (4).
  5. When film passes roller (5) pull film until threading mechanism clicks "open" (4). Turn top switch "off".
  6. Engage film around snubber roller (5) and onto take-up reel (8).
  7. Turn top switch to "lamp" (1).

C. Run
  1. Adjust focus (6).
  2. Adjust framer (13).
  3. Set for silent or sound film (14).
  4. Adjust volume and tone controls (10).

D. Rewind
  1. Press arm release button (15) and raise take-up reel arm to a straight-up or vertical position.
  2. Attach film to front reel.
  3. Turn top switch (1) to reverse.
  4. Push rewind button (16).

FOUR SIMPLIFIED UNTHREADING STEPS:
  1. Remove exciter lamp cover (17).
  2. If closed, open threading system release roller. Swing out the lens carriage, and open the three sprocket guards.
  3. Starting at the blue roller (4) slip film out of the entire film path. (Holding film on both sides of sprocket rollers relieves film tension permitting easy removal).
  4. Proceed with rewinding as in D.



OVERHEAD FILM PROJECTOR

KEY

1. Nylatch button	5. Locating pins
2. Head	6. Three position switch
3. Focusing knob	7. Projection stage
4. Post latch	8. Plug

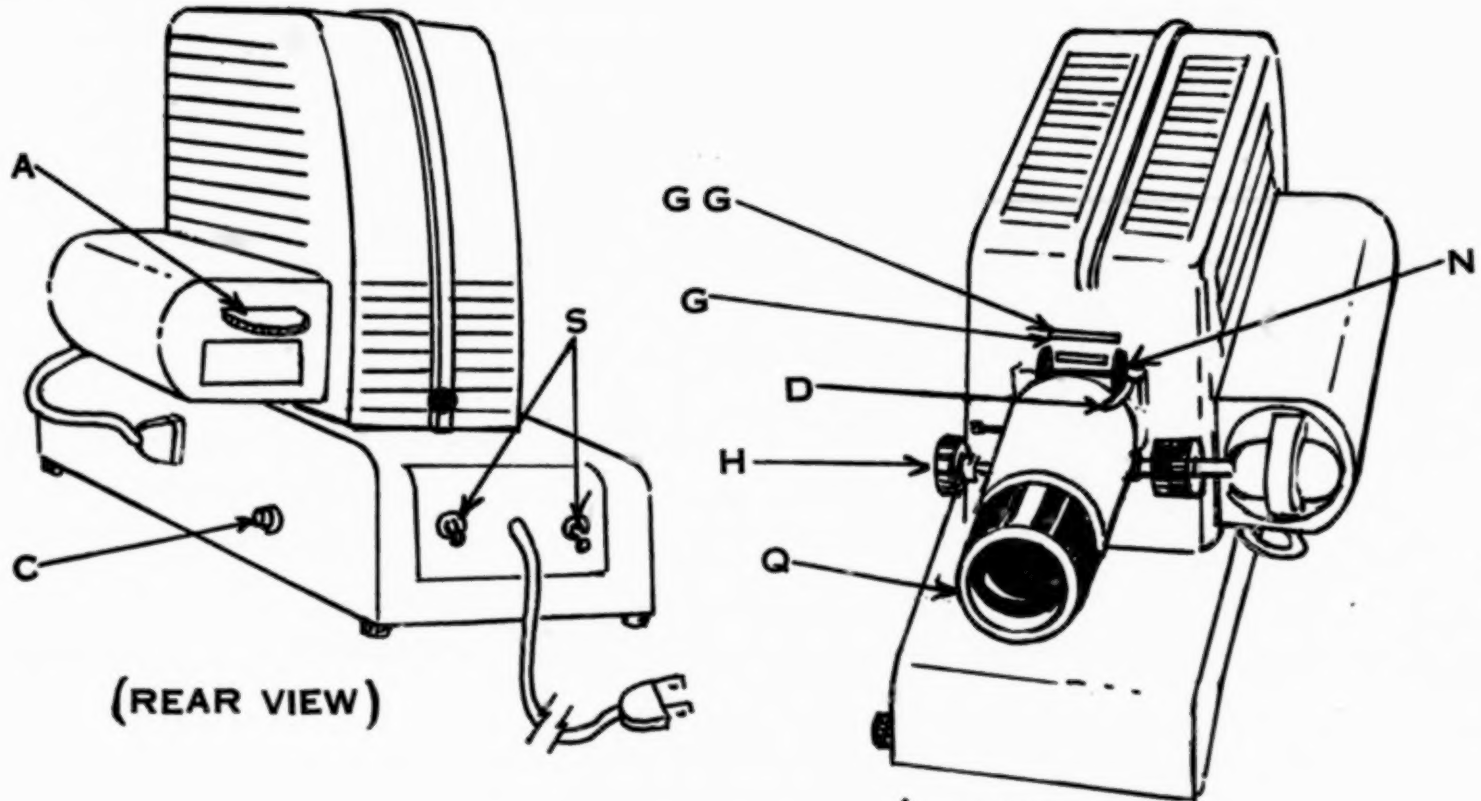
INSTRUCTION SHEET

OVERHEAD PROJECTOR

The purpose of the overhead projector is to impart knowledge through sight, and to improve teaching and learning. It is used to introduce a new concept of learning to the trainee by opening the world of expression through use of pictures, charts, graphs, and with little effort. It is valuable for classrooms because simplification of complicated problems can be achieved with "overlays" (1 or more transparencies made into book form and projected on top of each other). To show another part of the problem each transparency can be of different color acetate.

OPERATIONAL PROCEDURE:

1. Insert plug (no. 8).
2. Switch (no. 6) has three positions. The lower position is power off; the middle position operates the fan only; and the upper position puts the projection lamp on, and maintains the fan motor operation.
3. Place projection copy on projection stage (no.7).
4. Raise or lower image on screen by tilting top portion of head (no. 2). (Do not touch lens elements).
5. Focus image on screen by turning the focusing knob (no. 3); thereby raising or lowering head.
6. To shut off set, switch in middle position for a short period so that the fan operates to reduce internal temperature, then push switch down to off position.



(REAR VIEW)

(FRONT VIEW)

CONTROLLED READER

KEY

A. Speed dial
C. Stop button
S. Switches-On-Off, "Fan"
G,GG. Glass slides
D. Selectional lever
H. Turning knob
N. Film holder
Q. Focusing barrel

INSTRUCTION SHEET

CONTROLLED READER

The Controlled Reader presents left-to-right or line by line picture of reading material at a predetermined rate. It encourages better directional attack, faster thinking, more rapid reading, and improved comprehension. The machine may be used in group situations and for individual instruction. It is particularly valuable for drill with nearsighted trainees.

OPERATIONAL PROCEDURE:

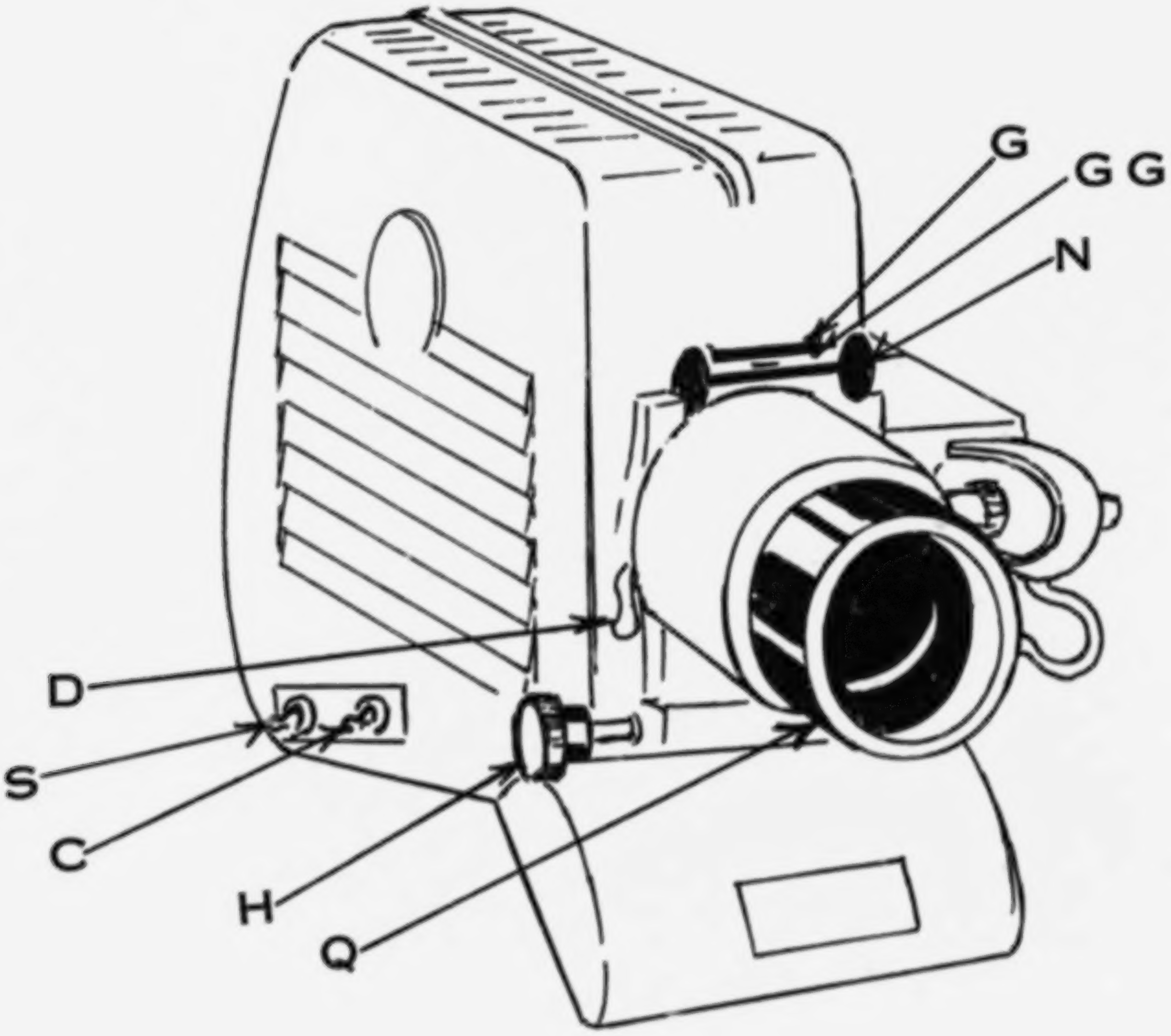
1. Select strip to be viewed.
2. Plug projector in wall outlet.
3. Set speed dial (A) at "off" position.
4. Turn on projector switches (5).
5. Insert film between the two glass slides (G, GG) keeping side of strip on which yellow paint has been applied toward screen.
6. With left hand gently force film down while slowly turning knob (H) counter clockwise until film is engaged. Reverse direction of strip by turning knob (H) clockwise.
7. Place remainder of rolled strip over horizontal bar (N).
8. Sharpen focus by rotating barrel (Q).
9. Move lever (D) up to obtain a guided slot and down to obtain free-reading slot. Adjust framing with lever (D).
10. Select reading speed by adjusting speed dial (A).
11. Stop movement of strip by pressing "Stop" button (C).
12. After strip has been run through, turn "Lamp" switch to "off." Leave "Fan" switch on until top of machine is no longer hot to touch.
13. Reroll film so that identification code is exposed.

COMPUTE READING SPEED AS FOLLOWS:

The calibrated speed dial indicates the number of lines per minute; the code numbered filmstrips indicate words per line. The strip 4 (5) 12, for example, has 5 words per line. To determine reading rate in words per minute, multiply words per line times lines per minute.

EXAMPLE:

If the filmstrip has 5 words per line and the speed dial is set at 20, the reading rate would be 100 words per minute.



CONTROLLED READER, JR.

KEY

S.	"On-Off" switch
G, GG.	Glass slides
H.	Turning knob
N.	Film holder
Q.	Focusing barrel
D.	Selectional lever
C.	"Stop" button

INSTRUCTION SHEET

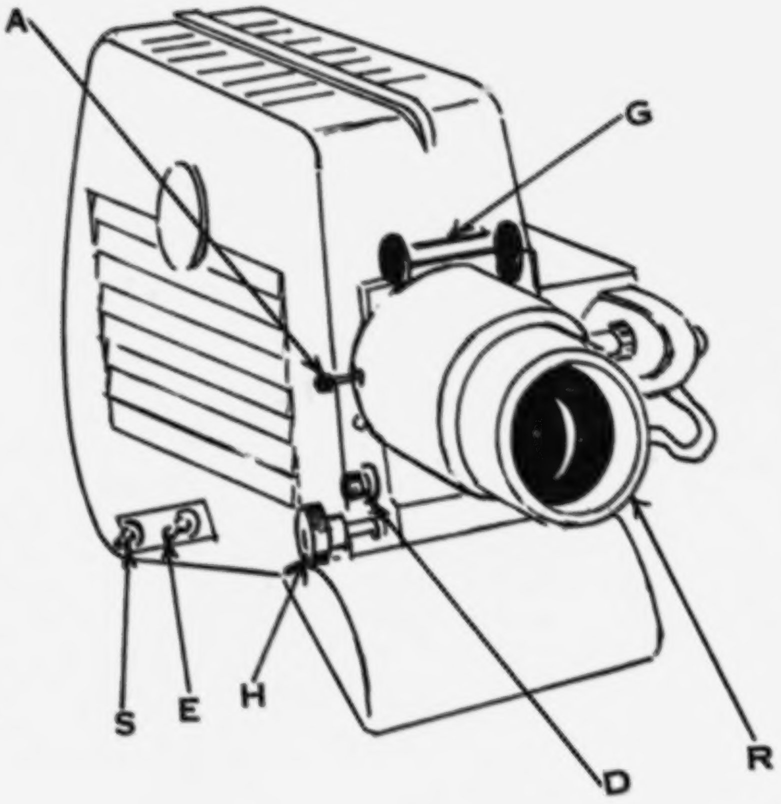
CONTROLLED READER, JUNIOR

The Controlled Reader, Junior produces the same result as the Controlled Reader. Its advantage lies in its more compact size and the small amount of space required for its use. This machine is better suited to individual reading sessions.

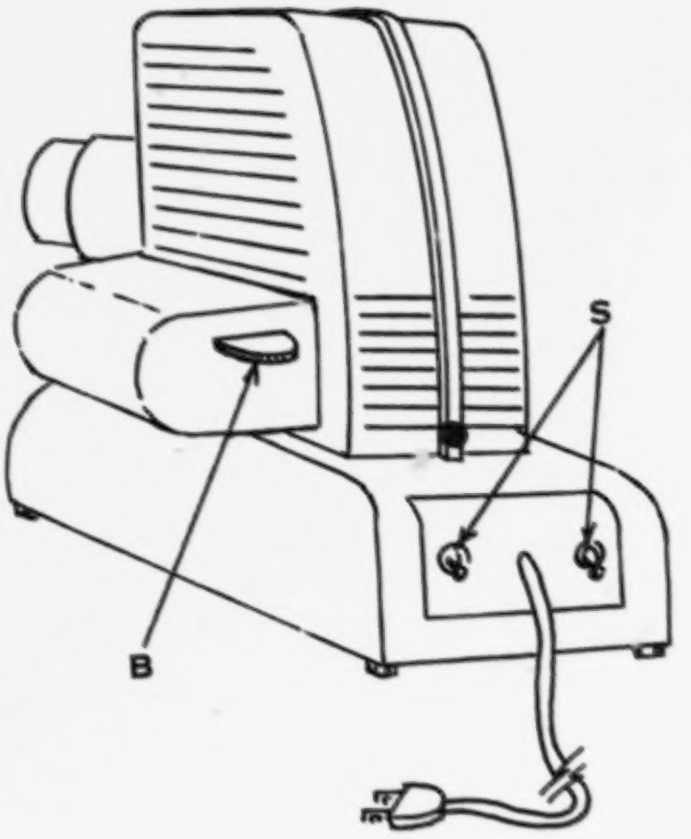
OPERATIONAL PROCEDURES:

1. Select strip to be viewed .
2. Plug in projector in outlet of learning station .
3. Set speed dial at "off" position .
4. Turn on projector switch (S).
5. Insert filmstrip between the two glass slides (G, GG) keeping side of strip on which yellow paint has been applied toward screen .
6. With left hand gently force film down while slowly turning knob (H) counter clockwise until film is engaged. Reverse direction of strip by turning knob (H) clockwise .
7. Place remainder of rolled strip over horizontal bar (N).
8. Sharpen focus by rotating barrel (Q).
9. Move lever (D) up to obtain a guided slot and down to obtain free-reading slot. Adjust framing with lever (D).
10. Select reading speed by adjusting speed dial .
11. Stop movement of strip by pressing "Stop" button (C).
12. After strip has been run through, turn switch (S) off.
13. Reroll film so that identification code is exposed .

Computation of reading speed is done in the same manner as with the Controlled Reader



MATH MATE -
FRONT VIEW



MATH BUILDER -
REAR VIEW

KEY

A. Masking device
B. Speed dial
D. Projection and framing knob
E. Stop button
G. Film injection slot
H. Film turning knob
R. Focus barrel
S. Switch

INSTRUCTION SHEET

MATH BUILDER AND MATH MATE

The Math Builder and Math Mate are modified filmstrip projectors which present arithmetic numbers or story problems at controllable rates in either left-to-right or line by line fashion. The Math Builder program is designed to present exercises to heighten accuracy in perception and retention of numbers and number facts.

These machines may be used by groups or individuals. However, it is suggested that use be restricted to eight to ten minutes daily for best results. Usage increases the ability to concentrate, to think, and to react rapidly.

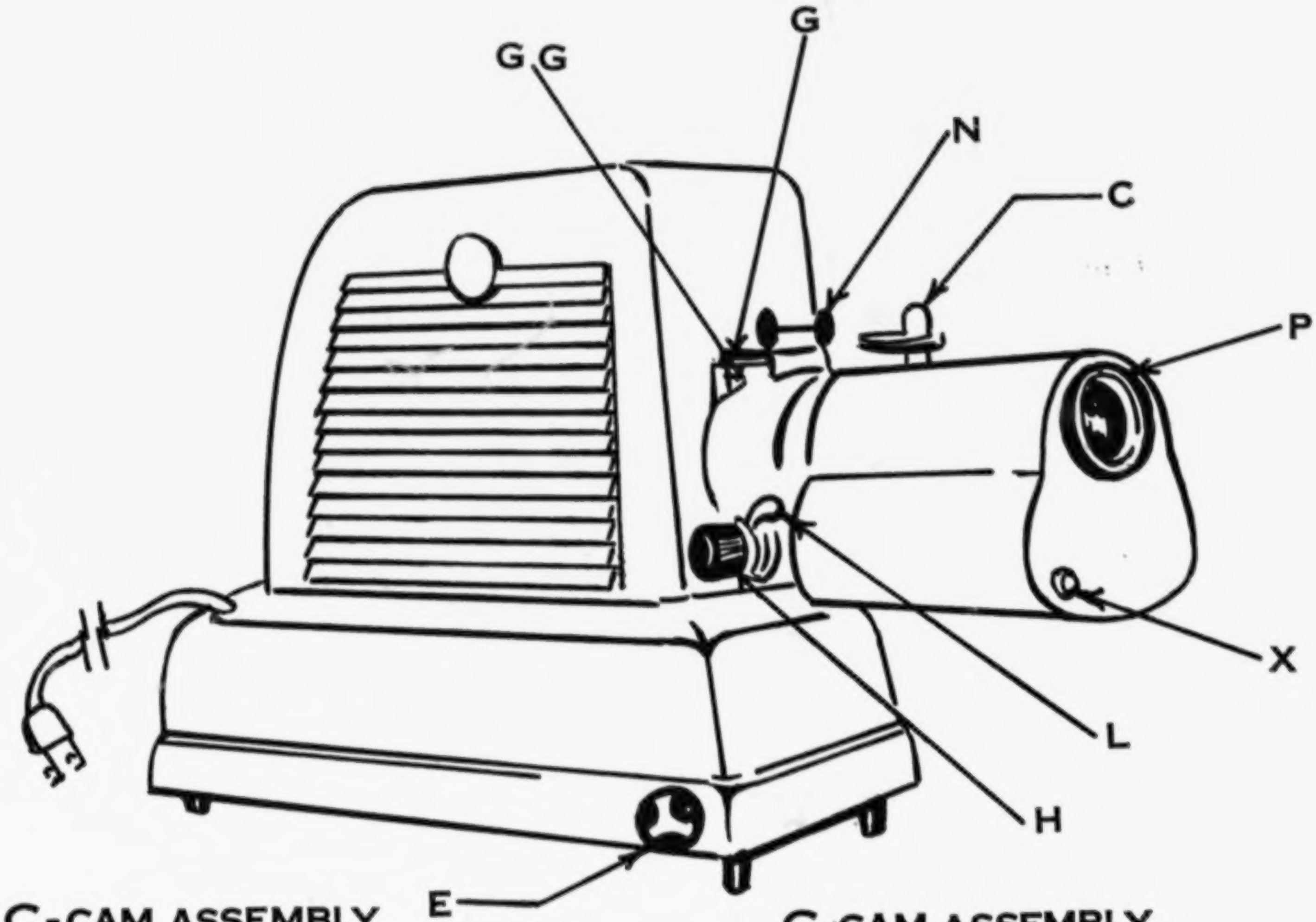
The Math Mate and Math Builder are similar in structure and in function with two exceptions:

1. The position of the switches which turn on the machines
2. The black button located on the side of the Math Mate which stops machine on a certain line after the speed dial has been set. This feature is not found on the Math Builder.

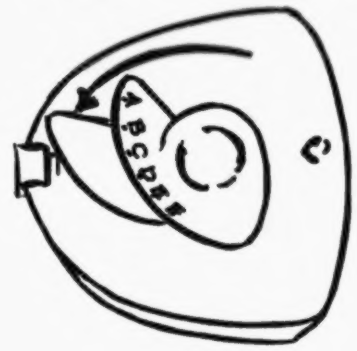
OPERATIONAL PROCEDURE:

1. Insert plug in wall outlet. Set speed dial B at Off position. Numbers on speed dial indicate lines per minute.
2. Turn on projector. On Math Mate use switch S at side of projector; on Math Builder use switches S at rear of projector.
3. Insert film at G, between the black plates, keeping toward screen the side on which yellow paint has been applied. Use knob H to turn film into projector, turning counter clockwise until film is engaged and print is visible on screen.
4. Move knob D up to obtain left-to-right projection and to adjust framing. Move knob D down to expose full line.
5. Sharpen focus by rotating barrel R.
6. Set speed dial B at appropriate rate.
7. To mask off a line or portion of a line, push masking bar A the desired distance to the left or right.
8. To stop the machine on a certain line after speed dial has been set, depress black button E on the side of the Math Mate.

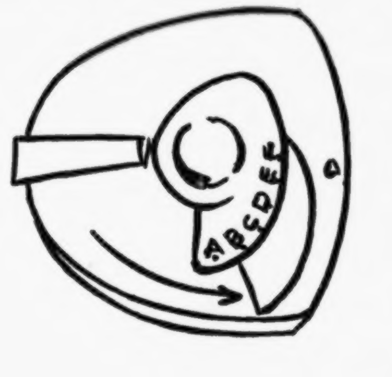
The life of the lamp in the Math Builder can be prolonged by turning the lamp off first and allowing the fan to run for a few minutes in order to cool lamp before putting machine away.


G G
G
N
C
P
X
L
H
E

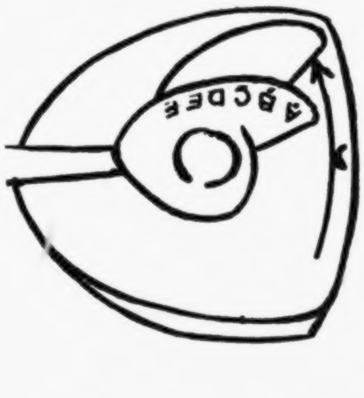
C-CAM ASSEMBLY
POSITION 1 READY



C-CAM ASSEMBLY
POSITION 2 WRITE



C-CAM ASSEMBLY
POSITION 3 CHOCK



KEY

G,GG.	Glass slides
N.	Film holder
C.	Cam assembly
L.	Framing lever
X.	Focus button
E.	Elevating knob

TACH-X

INSTRUCTION SHEET

TACHISTOSCOPE

The tachistoscope provides training in basic skills of word recognition and increases the span of comprehension. The timed exposures cause the trainee to work in an aggressive manner. Therefore, habits of aggressive seeing are formed. The tachistoscope proves most effective to levels 7 and above.

OPERATIONAL PROCEDURES:

1. Plug in projector.
2. Turn on switches at the rear of projector.
3. Focus projector by pressing the red button (X).
4. Frame in desired sequence--A, B, C, or D--by raising or lowering framing level (L) until material is centered properly.
5. Set speed by lifting the knob and rotating it until letter indicating desired speed is above line on lower cam. Drop locking pin into opening.
6. Press button X to ready position. The image will be blurred (Position 1).
7. Make exposure by pressing X. Lens will snap image into focus then out. (Position 2)
8. Check. (Position 3) Press X, allowing cams to rotate to position.
9. After using projector, leave fan on until top is cool to touch.

MODELS, MANIPULATIVE MATERIALS, AND ASSORTED AIDS

Models and manipulative materials for use in math and communications classes are countless and varied. For math, wooden models and blocks prove useful for the purpose of handling, to demonstrate place value or processes and relationships between numbers, and to develop a feel for shapes and fractional components. Also there are measuring rules, instruments, and devices. For both math and communications a listing can include flash cards, learning games, spin dials and discs, puzzles, tricks, toys, charts, flannel boards, overhead projection transparencies, bulletin board displays, the flip chart, and other aids both commercial and teacher-made. Some of the more commonly used aids are considered in the following discussion.

Flash cards are used for beginning or primary level trainees in both math and communications. They are only moderately effective for the adult group because they associate the cards with primary grades and for this reason are ashamed to use them. However, they can be made acceptable for teaching the basics of addition, subtraction, multiplication, and division, especially if used to work toward later practice with a Flash-X device which has great appeal. For communications, flash cards may be prepared of letters, sight-words, vocabulary words, vowel sounds, spelling problems, months, days, and years, road signs, street names, trade terms, and root words with flip-overs for prefixes and suffixes. The flash card which may be varied with a fold-down flap to offer immediate answer verification and for feedbacks, has as many uses as the instructor's imagination may devise. Both commercial and teacher-made cards prove practical, inexpensive, and adaptable to the Beginning Level learning needs.

The Bulletin Board offers opportunity to emphasize a point by having a catchy presentation before many people for a period longer than one class. To be effective it should (1) apply to a subject area being studied, or pertain to topics of general interest; (2) be eye-catching through contrast and effective use of color, the arrangement of materials or an enticing caption; (3) have uniform lettering which is simple in style and easy to read at a distance; (4) carry out a central idea or theme; and (5) should be changed often.

The theme for a bulletin board may be taken from shop work, class discussion, or may refer to trainee personal life, behavior or attitudinal changes. In the hall of one training facility a bulletin board display of large black block letters and black silhouettes on white background emphasized a point in regard to gossip. As a trainee walks past such a bulletin board several times a day the theme catches the eye and the idea is gradually assimilated by repetitive viewing.

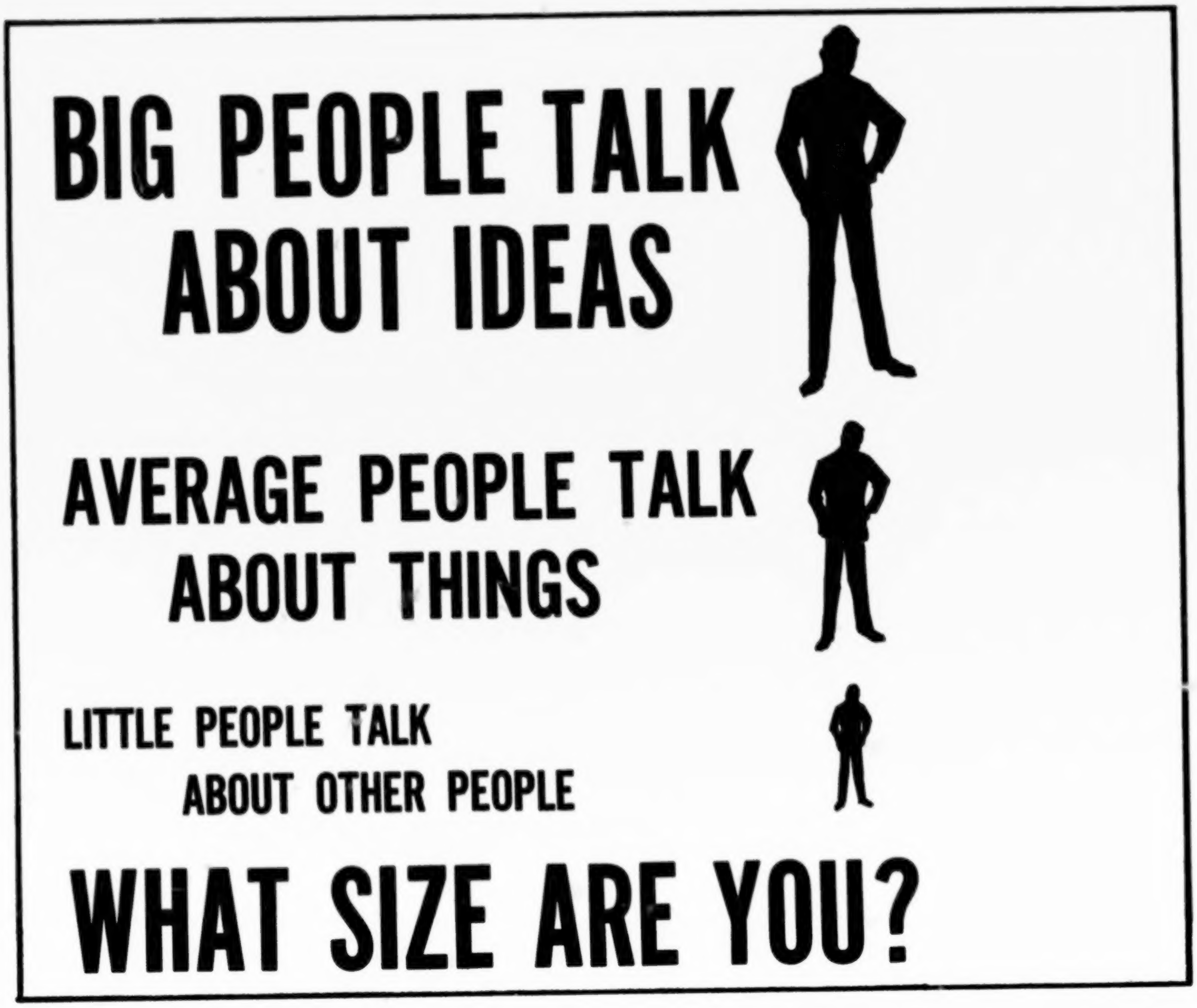
The Poster, usually somewhat smaller but similar to the bulletin board has about the same use and makeup. It has an advantage, however, in that it may easily be removed from the bulletin board and stored for reuse at a later time. Usually a poster is developed more for illustrative purposes though it too may develop a theme or tell a story to emphasize a point.

The Flip Chart placed on an easel offers a fairly permanent presentation of course content. Once prepared it is ready to introduce new units of study and to use for drill and review. It can be stored for later use if the content covers basics. The flip chart offers an excellent place to state rules and regulations, operating policies, fire drill procedures, and safety regulations, also.

Each page of the flip chart should be planned to present concisely and logically one idea, principle, or set of rules. Lettering should be large, uniform, simple, and easy to read from across a room.

The chalkboard probably is the oldest and most commonly used instructional aid found in classrooms. Nevertheless it often is misused or ineffectively utilized. It should be kept clean for best vision, and writing should be large, plain and readable from a distance. Its principal advantage as a teaching aid is that it enables the trainee to see a graphic development of the current lesson—the math problem, the formation of letters in writing, the plat for cutting upholstery fabric, or any point to be illustrated through diagrams and drawings. Use of the chalkboard may be incidental to answering a question, but planned instructional use is more effective.

Transparencies used on the overhead projector have several uses as another kind of instructional aid. They (1) provide individual or group skill practice and review, (2) may be used to present new material or to reinforce and/or summarize what has been taught; (3) offer a change of pace; (4) are ideal for graphic presentations and pre-prepared illustrations, charts, word lists, and math problems; and (5) provide a focal point for group concentration.



BIG PEOPLE TALK
ABOUT IDEAS

AVERAGE PEOPLE TALK
ABOUT THINGS

LITTLE PEOPLE TALK
ABOUT OTHER PEOPLE

WHAT SIZE ARE YOU?

A considerable number and variety of transparencies are available commercially on such related subjects as social security and income tax, as well as on such topics as the basic computational procedures, geometric construction, phonics, and others. Though fairly expensive to buy they are usually expertly prepared to demonstrate sound educational practices.

Due to the cost of commercial sets, many instructors prefer to prepare their own transparencies personalized to fit in more exactly with the local instructional needs. Often at surplus stores inexpensively priced heavy duty transparency sheets can be found. Mark on them with a felt pen, erase with a damp cloth, and reuse. Of course, this method is predicated on being fortunate enough to find the surplus sheets, but another method may be used to produce transparencies for about 17 1/2¢ each. Directions follow.

INSTRUCTO SPIRIT/TRAN MASTERS

Combination Spirit Master and Overhead Transparency

SPIRIT/TRAN MASTER is a revolutionary development. NO TRANSPARENCY MAKING MACHINE IS REQUIRED. No time is wasted. The minute copies are run off, the clear plastic master is ready to project. Master is non-smudge, non-bleed black, with extraordinarily long shelf-life.

NOTE:
The clear plastic sheet in the center of the master unit is the SPIRIT/TRAN. The plastic sheet is used on your spirit duplicator AND is your transparency.

DIRECTIONS:

(1) Remove protective blue tissue paper and throw away. Leave the transparent plastic sheet in place. This plastic will be both the spirit master and transparency for use on the overhead projector.

(2) Write or draw on the white paper on top of the master unit, just as you would with any ordinary spirit master. Use ball point pen or stylus for best results.

(3) Using the plastic sheet on any spirit duplicating machine, run off up to 150 copies on duplicator paper. Copies will print in black.

(4) Remove the plastic sheet from the duplicating machine; and it can immediately be projected, using any overhead projector.

Of course, transparencies made by the usual method as prescribed by the manufacturer are satisfactory and permanent but are more expensive.

The Flash-X is a small, manually operated viewing device into which any one of an assortment of discs may be inserted. The discs cover basic addition, subtraction, multiplication, and division, and permit each problem to appear in the view window for 1/2 second. The Flash-X makes possible individual practice with varied arithmetic combinations, builds speed and accuracy, and provides enjoyment while learning.

The Fractional disc is a set of colorful circles in pieces to show fractional parts. This device aids in introducing and explaining fractions through a manipulative means of study and comparison. It is used for low level trainees to learn basic math facts, but is only moderately effective because they associate cards with primary grades and are embarrassed to use them.

The Math Wheel is a square shaped plaque with an inner, circular, rotating disc showing fractional parts, decimal equivalents, and angular measurements. Valuable for practice, it may also be used for individual review.

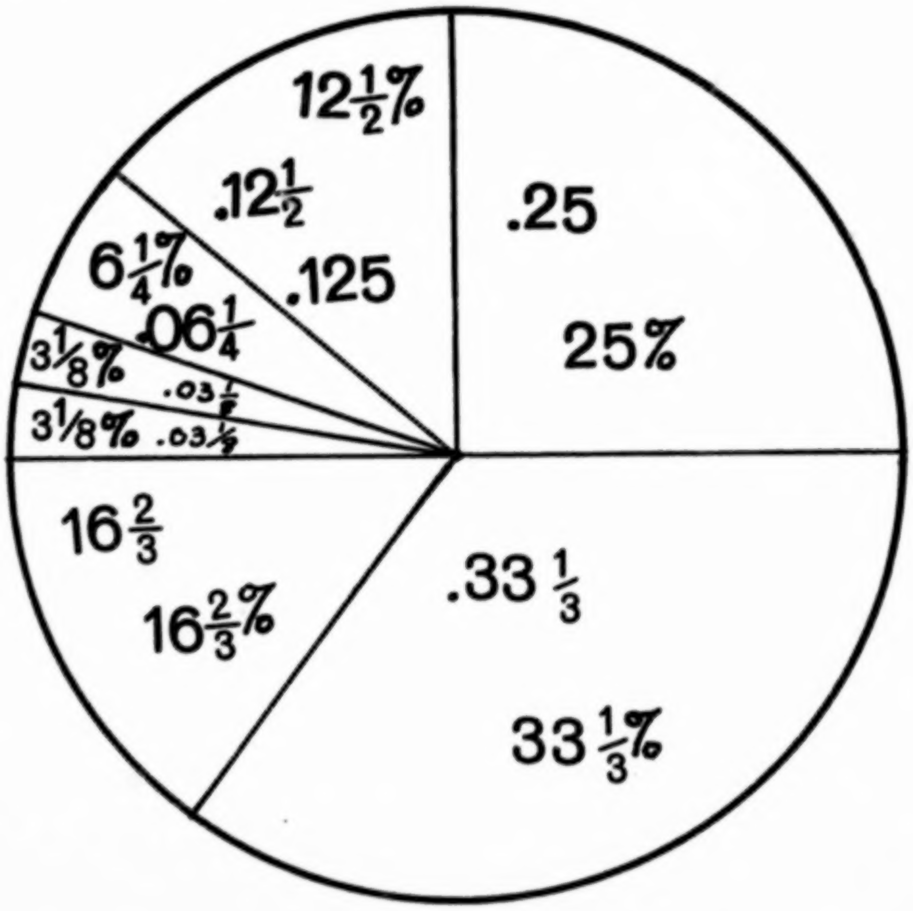
Small, wooden shapes, triangles, rectangles, squares, cones, cylinders, and parallelograms are helpful in teaching measurement, perspective, and basic geometric forms. Other wooden blocks, oblong and of different sizes, may be used for more or less the same purposes.

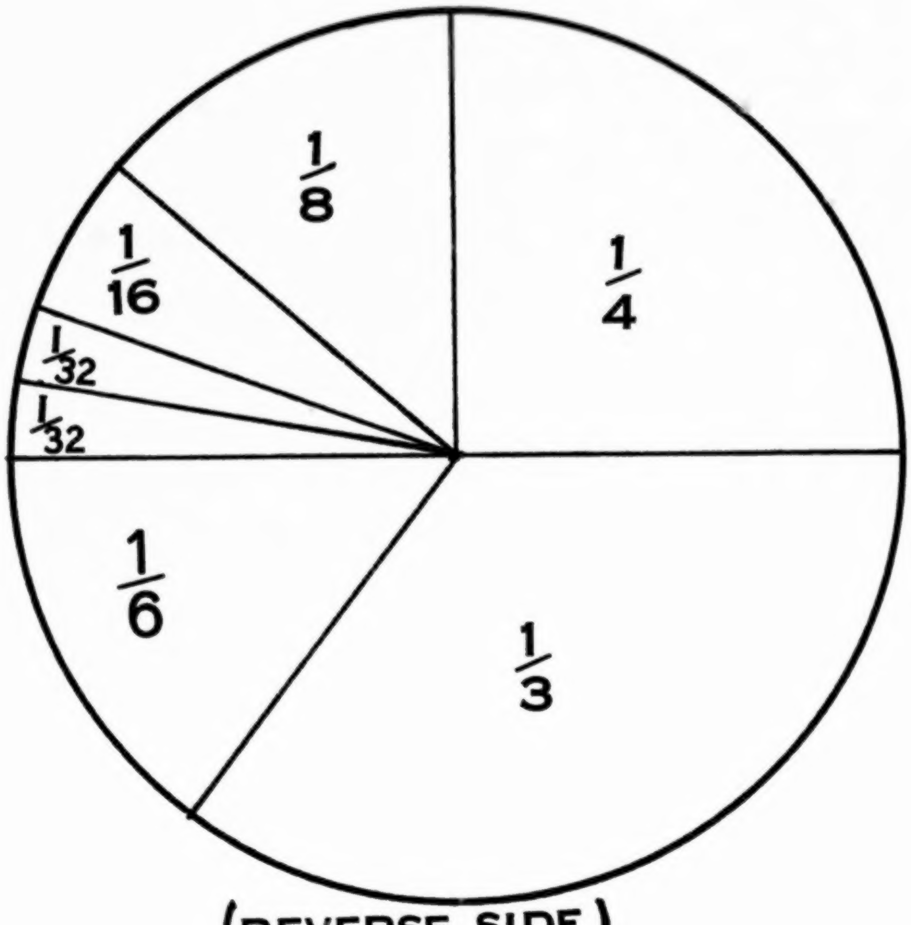
For use in communications classes there is an equivalent number of aids. The phonics wheel, similar to a math wheel, is composed of two joined cardboard circles which move to give practice in initial substitution of single consonants and consonant blends.

The Phonetic Quizmo, a game which may use any number of players, is especially useful. It is similar to bingo in that single sounds or consonant blends are spoken by the caller, identified by the player, and covered on the player's card. The winner is the one who covers a straight line of blocks, either vertically, horizontally, or diagonally.

Sentence Builders also is designed for any number of players. Basic sight words are printed on small squares of tag board. Each player is issued a predetermined number of squares from which he is

REVERSIBLE DISC FOR TEACHING FRACTIONS


$12\frac{1}{2}\%$
$.12\frac{1}{2}$
$.125$
$.25$
25%
$6\frac{1}{4}\%$
$.06\frac{1}{4}$
$3\frac{1}{8}\%$
$.03\frac{1}{8}$
$3\frac{1}{8}\%$
$.03\frac{1}{8}$
$16\frac{2}{3}$
$16\frac{2}{3}\%$
$.33\frac{1}{3}$
$33\frac{1}{3}\%$


$\frac{1}{8}$
$\frac{1}{4}$
$\frac{1}{16}$
$\frac{1}{32}$
$\frac{1}{32}$
$\frac{1}{6}$
$\frac{1}{3}$

(REVERSE SIDE)

CHART FOR TEACHING PLACE VALUE

PLACE VALUE

BILLIONS			MILLIONS			THOUSANDS			HUNDREDS		
HUNDREDS	TENS	ONES,	HUNDREDS	TENS	ONES,	HUNDREDS	TENS	ONES,	HUNDREDS	TENS	ONES
											5
										6	5
									1	3	4
								7,	2	2	2
						8	0	3,	1	1	1
							2	0,	3	6	7
					9,	0	7	6,	4	2	8
		1,	6	4	7,	4	0	2,	5	3	1

to construct a coherent sentence as long as possible. The total squares used in an approved sentence build his score. The trainee who first reaches the predetermined total is declared the winner.

Language Skill posters are sets of two-color placards stressing language skills, grade levels 2 - 6. They may be used directly on the wall or on a bulletin board, and are beneficial from the standpoint of prolonged exposure to the material listed on each. Before oral discussions the instructor calls attention to the card labeled "Discussions" to review the points to remember. Other pertinent topics title the other cards.

Additional miscellaneous instructional aids used in communications classes include: word lists, both graded and ungraded; dictionaries; encyclopaedias; atlas; almanac; catalogs (mail order; shop related); telephone directory; city directory; street and road maps; travel folders; the Constitution of the U. S.; newspapers; and magazines. Recommended as a source of aids is the book "Free and Inexpensive Learning Materials" published annually by the Division of Surveys and Field Services, George Peabody College for Teachers, Nashville, Tennessee 37203. This book contains a list of 4000 free and inexpensive aids some of which the MDT Basic-Remedial Education instructor will find helpful.

Field trips offer a different kind of aid to instruction by providing new experiences. Though the trip itself usually is of great interest and value, it also may be used afterwards for the purpose of oral discussion and written reports.

Resource people provide still another kind of instructional aid of value. Careful selection should be made to suit the resource person to the subject, topic, and trainees being taught. The procedure to follow involves getting permission from the person in authority to extend the invitation; making the contact to set up arrangements and the date; preparing the class by choosing a member to act as host, another to make the introduction, and a third to respond to the speaker; and having the class write a letter of appreciation to the guest. If this procedure is followed a variety of class activities result.

A different kind of instructional aid but one which is valuable is the learning station. It is designed for reading and listening with either the Controlled Reader Junior or the tape recorder and earphones. Instructors state that trainees make added use of the stations for study by putting on the earphones to to shut out outside noises when street sounds are a problem.

EVALUATION OF INSTRUCTIONAL AIDS

Since so many instructional aids are available the Basic-Remedial Education teacher needs to be selective in choosing those to purchase or use. An aid should be chosen according to (1) what it will accomplish or how it will perform; and (2) how it will help the instructor transmit ideas or present materials. Further the aid must offer exploratory activities for the trainee and add interest and reality to the learning as well. In the final evaluation the test is whether the aid will do the job better than it can be done in any other way.

To determine the use of an aid consider these points. The aid should be clearly visible to everyone in the room. If lettering is used it should be readable by everyone regardless of the distance he is removed from it. Color may accent the aid in a way to catch attention or emphasize a feature. It should present an idea, a sequence, or a relationship that can scarcely be presented otherwise. If the aid is a model it should be built to scale, either reduced or enlarged in size, and should be portable to permit use in more than one place.

Aids selected with these features in mind should be usable and practical.

SUMMARY

Instructional materials and aids which usually prove to be a major factor in successful instruction may be classified in three groups: (1) written materials; (2) audio-visual aids; and (3) models, manipulative materials, and assorted aids. Though the quality of instructional materials is excellent for the most part, nevertheless they cannot supplant the instructor. Properly chosen, however, they do help him present information more vividly and dramatically.

CHAPTER IX

THE LAST WEEK

CLOSING THE PROJECT

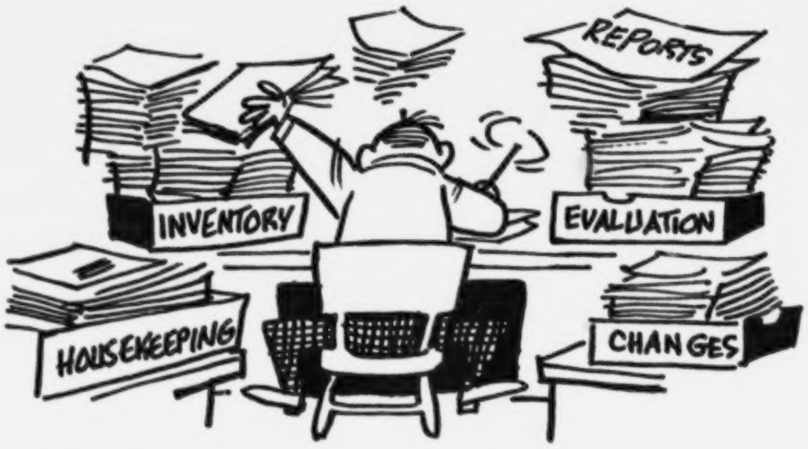
In the development of a project one week usually is set aside at the end of classes to complete all details. During this time reports must be completed, the program evaluated, and all left in order.

Reports are an obligation which should be fulfilled as soon as possible after the close of classes. Usually the office is waiting for them so they should be completed promptly.

The final evaluation of the trainee can be a tedious effort unless advance preparation has been adequate. In many training facilities, weekly evaluations for the first month, and monthly evaluations thereafter, have been completed by the instructors and turned in to the guidance department. Copies of these, kept in the file of the Basic-Remedial Education teacher reflect a reasonably clear picture of trainee progress and attitudes and offer assistance in formulating the last evaluative report.

Some instructors find it helpful to note daily any special comment in regard to trainee behavior or performance. These serve to motivate the student to greater effort since he is permitted to view the comments, and act as a written reminder to the teacher who files the chart for use as needed. The week-by-week compilation of information is helpful in preparing final trainee evaluation and also offers an exact reference at a later date for job recommendation.

During this last week an equipment inventory check is useful to the supervisor and is required by law as well. This too is the time to check audio-visual and other equipment for repairs which may be required.



THE JOB IS NOT FINISHED
—UNTIL THE PAPER WORK IS DONE!

Good housekeeping is important in teaching the trainees safety and neatness, and is also a part of the teacher's daily program as well. Since most MDT Basic-Remedial Education classrooms are well supplied with equipment, machines, and other supplies, it stands to reason that all should be put in order at the close of the program. It is desirable to arrange supplies neatly in cabinets or on tables, to wash and dry the metal desks, files, and storage cabinets to remove finger marks and smudges. Follow up by rubbing with a non-abrasive polish similar to silver cream.

To protect audio-visual items cover or place inside a cabinet away from dust. Stack workbooks, kits, and instructional aids on storage shelves and cover neatly. Sort magazines and newspapers and separate those to be preserved for reference. Arrange posters and bulletin board displays according to subject areas, and store. This is a desirable time to repair models, displays, and instructional aids.

During the last week evaluate the total job, not just the trainee. Re-examine the course outline, making desirable changes and additions in relation to use during the project. Check over lesson plans with a critical eye. Measure and balance methods of instruction to determine which proved successful during the class sessions.

Most supervisors require a written evaluation by each instructor and the Basic-Remedial Education teacher is no exception. Certain questions seem especially pertinent for the purpose of evaluation. What is the instructor's general responsibility to his Basic-Remedial program as related to the total program? How was the daily program planned? How were the individual needs of the trainee set? How did the Basic-Remedial class work out in accordance with the project as planned and approved? (If it did not, how can the needs be met better when the project is repeated?)

After answering these questions an evaluation might include a resume of the kinds and types of trainees who participated in the program. Mention probably should be made of their placement record as it is known, though no aspects of instructor participation in placement would be necessary since that responsibility rests with Employment Security.

Additional questions pertinent to an evaluation could include these: (1) How did the guidance personnel fit into or contribute to the Basic-Remedial program? (2) If the project were repeated, how would you work it out after having had the experience of this class? (3) What new or innovative ideas have been gained from the experience of teaching this group of trainees? (4) What suggestions would you, the instructor, advise be written into or recommended for the next project?

The following form developed by the conference method with Basic-Remedial Education instructors is one evolved for use in Tennessee evaluative procedures. It provides a sequential means of including answers to many of the foregoing questions.

Evaluation of Basic-Remedial Education

Project Name ______________________________ Date ____________

Project Number ______________ Subject(s) Taught ______________

Instructor ______________________________

Dates Taught - From ______________ To ______________

Ability level of trainees taught ______________________________

OBJECTIVES

What were the objectives desired for these trainees?

How do you feel you have met these goals?

What approach did you take?

INSTRUCTION

How has instruction been oriented toward the shop program?

Are you using a course outline ________; if not, what substitute are you using?

Are you using written lesson plans?_________ Describe the kind of plan you are using.

What approach are you using, group______ individual_______ Explain the value of this approach?

THE INSTRUCTOR AND THE PROGRAM

How do you interpret your role in regard to:

The local MDT Program

The trainee

Your co-workers

DEPARTMENT NEEDS

Were the instructional materials, equipment, and supplies adequate for your teaching purposes? Yes____; No____. Specify any inadequacies in regard to:

Instructional Materials

Equipment

Supplies

What equipment, materials, and supplies, have you found not usable?

Equipment

Materials (instructional)

Supplies

Check on the following list those items available for use in your classroom. Indicate number.

✓	No.	
		Tachistoscope
		Overhead projector
		Controlled Reader
		Controlled Reader (jr.)
		Movie Projector (auto)
		Movie Projector (man)
		Tape Recorder
		Math Builder
		Math Mate
		Record Player
		Listening Stations
		Projection Tables
		Storage Cabinets
		Pencil Sharpener
		Opaque Projector
		Electric Outlets
		Bookcases
		Filing Cabinets
		Filmstrips
		Lockers
		Wall Clock
		Time Clock
		Chalk Boards
		Bulletin Board
		Flannel Board
		Transparencies

TRAINEES

Discuss the trainees in regard to (a) attitude, (b) behavior, and (c) personal problems. Give examples.

Under the following headings, list recommendations for improvement:

Instructional Materials

Equipment

Supplies

Curriculum Improvement

SUMMARY

The last week, even though no trainees are present, is as busy as any during the project. It is a time for self-examination and for determining if the best means were used to help the trainees. It is the time for the instructor to evaluate, examine, and review the total program as well as trainee performance and advancement, satisfactions and joys, disappointments and frustrations. Likewise it is the time to look at the objectives to determine how well they were met. Through this examination the instructor will be more aware of the quality of the MDT program, its needs, and accomplishments.

APPENDIX

164-165

FORMS FOR USE IN CUMULATIVE FILES OF BASIC-REMEDIAL EDUCATION TRAINEES

166 - 167

CLASSROOM SAFETY: MATHEMATICS

1. Floors should be kept free of all objects. Please pick up anything you drop and put it in its proper place.

2. Be careful to watch for electrical cords. Unplug all cords when not in use.

3. Trainees will keep their chairs solidly on the floor and not tipped backwards.

4. At no time should any object be thrown in the classroom.

5. Trainees should conduct themselves in an orderly manner at all times in the classroom.

6. Each trainee should understand that this is an adult training program and that each individual is responsible for his own conduct.

These safety instructions have been explained by my instructor and I understand them.

____
Sign here.

TEACHER ADMINISTERED TEST SCORES

TRAINEE____

SHOP____

COUNSELOR____

TEACHER____

TEST DATE	TYPE OF TEST	RESULTS

COMMENTS:

PATTERN FORM

MY AUTOBIOGRAPHY

1. Facts about yourself:

When and where you were born.
If you lived there all your life, or if you lived in other states or cities.
Places you have visited in other states.
Interesting facts about your birth or birthplace.

2. Your family:

Unusual or interesting facts about your parents or brothers and sisters. If any of them have had certain honors or have been in trouble, you may wish to include this information.

3. Your Home:

Whether you rent or own your home.
The distance you life from training center, and how you travel.
Type of house you live in and what you like best, or least about it.
Your chores or duties around your house.
Your idea of a dream house, - equipped how - musically, machines, books, TV, refrigerator, etc.

4. Your education and schooling:

When you started to school and places attended.
Courses you liked best and least.
Why you liked or disliked school.
If you made very low grades, or failed.
Your own reason why you think you failed.
Part time jobs after school or summer work.

5. Interests in life:

My spare time and what I do with it, or what I'd most like to do in my spare time.

6. My future occupation or job:

What my parents wanted me to be.
My first, second, and third choice of a job or profession.
Any particular company you would like to work for.

7. Everything else you can write about yourself:

PERSONAL DATA SHEET

Name____
Last First Middle Maiden

Age__________Date of birth__________________________

Address______________________________Telephone number__________

Single__________ Married__________ Divorced__________ Separated__________

Sex: M____ F____

Number of children and ages_________________________

Name of person with whom you live___________________

Number of brothers and sisters (give ages)__________

____

School last attended________________________________
Name City State

Grade completed__________________Reason for dropout__________

____

List special interests or hobbies___________________

____

Do you attend church regularly?_____________________

List any physical handicaps you have________________

____

COMMUNICATIONS

Outline for Oral Performance

Name________________________________ Class____________________________ Date______________

Title of Speech____________________________________ Kind of Speech __________________________

Source of Information____

____

INTRODUCTION of PERFORMANCE

The opening statement I plan to give is:

____

____

____

BODY

The main points to support my central idea are:

I. ____

II. ____

III. ____

CONCLUSION

I plan to conclude my talk with this statement:

____

____

____

INSTRUCTOR'S COMMENTS

____

____

____

TRAINEE EVALUATION BY BASIC–REMEDIAL EDUCATION TEACHERS

Student ____________________ Counselor ____________________ Homeroom ____________________

Teacher ____________________ Subject ____________________ Date ____________________

This report may serve as a summary for each pupil. On the reverse side of this sheet, the counselor will record the significant facts of each individual student conference.

	H	A	L*	COMMENTS
RESPONSIBILITY AND DEPENDABILITY				
1. Sees a job through under all conditions				
2. Uses time effectively				
3. Uses good judgment				
4. Participates well in class activities				
SOCIAL ADJUSTMENT				
1. Gets along well with people				
2. Understands and accepts people				
3. Considerate of others and their opinions				
4. Shows satisfactory self-confidence				
5. Refrains from attention-getting				
INFLUENCE AMONG HIS FELLOWS				
1. Manifests constructive leadership among his peers				
2. Recognizes and supports democratic leadership				
3. Develops a spirit of friendliness in a group				
4. Stands for socially acceptable principles and behavior				
WORK HABITS				
1. Sets standards in line with his or her abilities				
2. Follows directions ably				
3. Works independently				
4. Organizes work well				
5. Responsible for materials at all times				
6. Gets work done on time				

1. Works at ABOVE . . . . BELOW . . . . EXPECTED . . . . level.
2. Comments on health, physical status or other below.

*H = High
A = Average
L = Low

TEACHER EVALUATION

(For use by individual teacher only)

1. Honestly tries to understand me? Yes ____ No ____
2. Is sincere in wanting to help me? Yes ____ No ____
3. Courteous? Yes ____ No ____
4. Gives constructive criticism? Yes ____ No ____
5. Too critical? Yes ____ No ____
6. Respects me? Yes ____ No ____
7. Listens to me? Yes ____ No ____
8. Is creative? Yes ____ No ____
9. Easily sidetracked? Yes ____ No ____
10. Has knowledge of subject? Yes ____ No ____
11. Has good class atmosphere? Yes ____ No ____
12. Controls temper? Yes ____ No ____
13. Shows favorites? Yes ____ No ____
14. Gives clear directions? Yes ____ No ____
15. Uses good language? Yes ____ No ____
16. Creates interest? Yes ____ No ____
17. Is intelligent? Yes ____ No ____
18. Reflects high moral & ethical principles? Yes ____ No ____
19. Believes I am important? Yes ____ No ____
20. Is boring? Yes ____ No ____
21. Seems sincere? Yes ____ No ____
22. Sets worthwhile goals for me? Yes ____ No ____
23. Is a bully ____, bossy ____, nosy ____, none of these ____.
24. Neat in appearance? Never ____, Rarely ____, Usually ____

25. Proud of my work? Yes ____ No ____

26. Sarcastic? Yes ____ No ____

27. Picks on me? Yes ____ No ____

28. Polite? Yes ____ No ____

29. Reflects self-confidence? Yes ____ No ____

30. Wants me to do my best, not just get by? Yes ____ No ____

31. Tries to help me solve any problem I ask about? Yes ____ No ____

32. Recognizes my talents and interests and helps me develop them?
Yes ____ no ____ doesn't care ____.

33. Helps me improve my weak points? Yes ____ No ____
Never ____

34. Is realistic? Yes ____ No ____

35. Lives in a dream? Yes ____ No ____

36. Is dependable ____, reliable ____, honest ____, trustworthy ____,
none of these ____.

37. Bears a grudge? Yes ____ No ____

38. Is a clear logical thinker? Yes ____ No ____

39. Considers my problems important? Yes ____ No ____

40. Listens to my suggestions? Yes ____ No ____

41. Let's me express my ideas? Yes ____, no ____,
only when I agree with her ____.

42. Ridicules me in front of the class? Yes ____ No ____

43. Is suspicious and doubtful? Yes ____ No ____

44. Has a sense of humor? Yes ____ No ____

45. Admits her own faults and weaknesses? Yes ____ No ____

46. "Takes out" personal unhappiness on me? Yes ____ No ____

47. Seems happy and pleasant to be around? Yes ____ No ____

48. Encourages me to do whatever I can? Yes ____ No ____

49. Is lazy? Yes ____ No ____

50. Reasonable? Yes ____ No ____

TRAINEE SELF-EVALUATION

1. Do you feel free to ask questions of your teacher? Yes ____ No ____

2. Do you ask honest, sensible questions? Yes ____ No ____

3. Are your questions given consideration? Yes ____ No ____

4. Are your questions answered? Yes ____ No ____

5. Do you understand yourself and your actions?
Sometimes ____, never ____, usually ____.

6. Are you courteous to your friends? Yes ____ No ____

7. Are you courteous to your teacher? Yes ____ No ____

8. Do you respect your teacher? Yes ____ No ____

9. Do you respect your friends? Yes ____ No ____

10. Do you treat others as you wish to be treated? Yes ____ No ____

11. Can you accept criticism? Yes ____ No ____

12. Can you give constructive criticism? Yes ____ No ____

13. Are you critical of others who have your faults? Yes ____ No ____

14. Do you have an inquiring mind? Yes ____ No ____

15. Do you want to be respected? Yes ____ No ____

16. Do you listen when your friends speak? Yes ____ No ____

17. Do you listen as your teacher talks? Yes ____ No ____

18. Are you creative? Yes ____ No ____

19. Are you satisfied to do just enough to get by
even if you are capable of doing more? Yes ____ No ____

20. Are you attentive to friends ____, to teachers ____?

21. Are you easily sidetracked? Yes ____ No ____

22. Do you daydream? Too frequently ____, never ____, sometimes ____.

23. Are you easily "led astray"? Yes ____ No ____

24. Are you overly emotional? Yes ____ No ____

25. Do you lose your temper too often? Yes ____ No ____

26. Are you sorry your temper flares up? Yes ____ No ____

27. Can you follow directions? Yes ____ No ____

28. Do you follow teacher directions or goof off? Yes ____ No ____

29. Is your language to your friends appropriate?
"Smutty" ____.

30. Is your language to your teacher appropriate?
"Smutty" ____.

31. Can you spot a good learner? Yes ____ No ____

32. Do you reflect high moral and ethical principles? Yes ____ No ____

33. Do you consider yourself to possess any worthwhile knowledge? Yes ____ No ____

34. Are you sincere? Yes ____ No ____

35. Are you lazy? Yes ____ No ____

36. Do you pout and sulk? Yes ____ No ____

37. Are you bossy or bully? Yes ____ No ____

38. Are you a show-off? Yes ____ No ____

39. Do you set worthwhile goals for yourself?
Scholastically ____, professionally ____, personally ____, no ____.

40. Do you abide by laws, rules, and regulations?
Yes ____, When made to ____. Not if you can help it ____.
Only if you gain by doing it ____. When you fear you will get caught ____.

41. Do you gossip and spread bad reports on others, true or not?
Yes ____, No ____, On people you dislike ____; On teachers ____;
On friends ____; To get even ____.

42. Do you have good study habits? Yes ____ No ____

43. Can you think clearly and logically and analyze and plan for yourself?
No ____, yes ____, with help ____.

44. Are you a useful citizen? Yes ____ No ____

45. Do you want all you can get but not want to work for it? Yes ____ No ____

46. Do you appreciate the world around you? Yes ____ No ____

47. Are you understanding? Yes ____ No ____

48. Do you have a healthy sense of humor? Yes ____ No ____

49. Do you find success in your life? Rarely ____, never ____,
sometimes ____.

50. Are you sarcastic? Yes ____, no ____, to teachers ____, to friends ____.

51. Do you pick on others and ridicule others? Teachers ____, to friends ____.

52. Do you get encouragement from success? Yes ____ No ____

53. Are you doubtful and suspicious? Yes ____ No ____

54. Are you happy? Sometimes ____. Yes ____ No ____

55. Are you trusting — do you believe others?
Yes ____, no ____, teachers ____, friends ____.

56. Do you feel at ease? Yes ____, no ____, with friends ____,
in class ____.

57. Are you realistic? Yes ____ No ____

58. Is your self-confidence nil ____, lacking ____, adequate ____.

59. Are you ambitious? Yes ____ No ____

60. Are you polite? to special people you want to impress ____
to teachers ____
generally, to everyone ____
no ____

61. Do you want a better way of life? Yes ____ No ____

62. Do you want it as a gift ____, a reward for work ____,
don't care to be any better off ____.

63. Are you usually bored? Yes ____, with life ____, with teacher ____,
with friends ____, no ____.

64. Do you honestly know your own abilities?
No ____, yes ____, couldn't care less ____.

65. Are you any of these ? Yes ____ No ____
Honest ____, reliable ____, dependable ____.

66. Would you steal if you knew you could get away with it? Yes ____ No ____

67. Would you lie if you knew you wouldn't get caught? Yes ____ No ____

68. Do you bear a grudge? Yes ____ No ____

69. Do you feel a pride of accomplishment when you get
something through your own initiative? Yes ____ No ____

70. Are you sloppy? ____, Do you have good posture? ____,
Are you neat and clean? ____, Do you ever think of personal
appearance? ____.

71. Are you stubborn? Yes ____ No ____

72. Are you here to learn all you can? Yes ____ No ____

73. Would you be here if you could afford to come without pay? Yes ____ No ____

74. Do you put in a good days work in every class? Yes ____ No ____

TRAINING REPORT

Name.. **Training Area**..

Report Number.. **Date**.................. **Instructor**..................................

Attendance Data: .... Days on Roll .... Days Present .... Days Absent .... Times Tardy

CODE: C—Communications **M**—Mathematics **S**—Shop

	QUALITY	RATINGS 1	2	3	4	5
PERSONAL	ADAPTIBILITY	Is unable to adjust to new situations C M S	Does not readily adjust to changes C M S	Makes genuine effort to adjust to new situations C M S	Generally can make adjustments promptly C M S	Always able to meet new situations C M S
	APPEARANCE	Untidy, carelessly dressed C M S	Clean, but careless in appearance and grooming C M S	Average in grooming and dress C M S	Neatly dressed; well groomed C M S	Outstanding in taste and care C M S
	EMOTIONAL STABILITY	Loses head easily C M S	Unresponsive; apathetic C M S	Usually well controlled C M S	Balance of responsiveness and control C M S	Notable and unusual control of emotions C M S
	INDUSTRY	Usually indifferent C M S	Sometimes lazy C M S	Average in industriousness C M S	Hard worker; willing to do more than assigned C M S	Exceptionally diligent eager to do more than assigned C M S
	INITIATIVE	Overly dependent on others C M S	Works best under constant supervision C M S	Requires little supervision C M S	Works capably with some supervision C M S	Does the "extra" things without being told C M S
	LEADERSHIP	Unable to lead C M S	Not usually a leader C M S	Sometimes displays leadership C M S	Leads well under most circumstances C M S	Displays marked ability to make things go C M S
	RELATIONS WITH	Surly, troublesome; indifferent C M S	Has difficulty working with others C M S	Usually polite and obliging; shows self-control C M S	Always congenial and cooperative C M S	Highly cooperative; inspires cooperation C M S
PERFORMANCE	ACCURACY	Makes many mistakes C M S	Frequently makes mistakes C M S	Usually accurate C M S	Seldom makes mistakes C M S	C M S
	SPEED	Very slow C M S	Slow C M S	Average C M S	Fast C M S	Very fast C M S
	PRODUCTION	Poor C M S	Below average C M S	Average C M S	Good C M S	Outstanding C M S
	USE OF WORKING TIME	Very wasteful C M S	Wasteful, loafs with others C M S	Average C M S	Efficient C M S	Very efficient C M S
	HANDLING TOOLS, SUPPLIES	Rough C M S	Careless C M S	Indifferent C M S	Careful C M S	Very Careful C M S
	CARE OF WORKING SPACE	Very untidy C M S	Careless C M S	Passable C M S	Neat; clean C M S	Very clean and orderly C M S
	USE OF MATERIALS	Wasteful C M S	Careless C M S	Fair C M S	Good C M S	Very Careful C M S
	OBSERVANCE OF SAFETY RULES	Disregards rules openly C M S	Disregards when not being watched C M S	Average C M S	Observes rules C M S	Extra careful, has own rules C M S
	DEPENDABILITY	Needs constant watching C M S	Sometimes unreliable C M S	Reliable but needs some direction C M S	Very dependable C M S	Thoroughly trustworthy C M S
	KNOWLEDGE OF SUBJECT	Completely lacking C M S	Inadequate knowledge C M S	Fairly well informed C M S	Knowledge of important details C M S	Superior knowledge C M S
OTHER FACTORS	ATTENDANCE	Poor C M S	Below average C M S	Average C M S	Above average C M S	Perfect or superior C M S
	PUNCTUALITY	Always tardy C M S	Seldon on time C M S	On time but needs some prodding C M S	On time most of the time C M S	Always on time C M S
	OVERALL COMPOSITE RATING	Poor; unsatisfactory C M S	Room for much improvement C M S	Fair, but lacking in a number of items C M S	Good, but can show improvement C M S	Superior C M S

Evaluation of Trainee's Use of Equipment
Communications

STUDENT____________________________CLASS PERIOD ____________DATE____________

SHOP____________________________

	Satisfactory	Needs Improvement	Unsatisfactory
1. Tape Recorder			
A. General operation			
1. Threading of machine			
2. Selection of speed			
3. Adjustment of tone and volume			
4. Use of headsets			
B. Recording of speeches and other oral work			
C. Use of prepared tapes for listening skills			
D. Preparation of written work from tapes			
2. Tach-X			
A. General operation			
1. Light switch			
2. Fan switch			
3. Focus			
4. Focusing of speed			
5. Insertion of film			
B. Tach-X films for spelling			
1. Location of lesson strip			
2. Location of lesson on strip			
3. Use of lesson film			
4. Replacing of film			
C. Tach-X films for spelling			
1. Location of lesson strip			
2. Location of lesson on strip			
3. Use of lesson film			
4. Replacing of film			
3. Controlled Reader and/or Controlled Reader Jr.			
A. General operation			
1. Light switch			
2. Fan switch			
3. Adjustment of speed			
4. Focus			

	Satisfactory	Needs Improvement	Unsatisfactory
B. Comprehension Strip			
1. Location of lesson			
2. Reading of lesson			
3. Follow-up			
C. Reading Strip			
1. Location of strip			
2. Preparation			
3. Reading			
4. Follow-up			
4. Word Clue			
1. Location of lesson			
2. Following of direction			
3. Follow-up			
5. SRA Laboratory			
A. Power Builder			
B. Rate Builder			
C. Listening Skill Builder			
6. Literary Sampler			
A. Location and selection of material			
B. Use of workbook			
7. Dictionary			
A. Location of words			
B. Pronounciation of words			
C. Selection of appropriate definition			
8. Supplementary Materials			
A. Use			
B. Care			
9. Encyclopaedia			
A. Location of Material			
B. Understanding of Information			

	Satisfactory	Needs Improvement	Unsatisfactory
10. Housekeeping habits			
A. Care of materials			
B. Care of room			

GLOSSARIES FOR USE IN RELATED INSTRUCTION

GLOSSARY
FOR
AUTO BODY REPAIR

ACETYLENE – compressed fluid which becomes gaseous when combined with acetone; a colorless gas which burns with a brilliant white light and is used for welding metals

ACETYLENE WELDING TORCH – attachment used for fused welding

ACID CORE SOLDER – an erosive substance necessary for lead to adhere to naked metal

ALIGN – to adjust a unit to the total structure to assure proper fitting by bringing in line

ALLEN WRENCH – wrench which fits inside of an Allen head bolt

BEVELING – the process of cutting and fitting metal to be welded by smoothing the surface to a slant or slope

BOXED END WRENCH – wrench with an enclosed circular end

BUFFING MACHINE – machine with a soft pad used for polishing high gloss finishes

BUMPER – a curved chrome bar attached to the frame and located at the front or rear of a car

BUMPER ARMS – heavy attachment on which bumper is positioned

C-CLAMPS – holding device in shape of a "C"

CHROME MOLDING (exterior) – decorative chrome on the outside of a car, sometimes used to conceal joints

COLD CHISEL – metal bar with flat beveled edge used in cutting metal

COME-ALONG – pulling device which makes more leverage possible

COMMON SCREWDRIVER – tool with a flat plate for turning screws

COMPOUND – a substance in paste form applied to new paint to achieve a fine finish

CRESCENT WRENCH – adjustable hand tool for holding, twisting, or turning an object

CROSSMEMBER – a unit attached to a structure for strength

CUTTING TIP – welding attachment used for cutting metal

DASH PANEL – instrument panel, on which several controls and gauges are located, found in an automobile between the driver and fire wall

DECK LID – a cover for the luggage compartment of a car

DIAGONAL CUTTER – scissors type cutter

DOOR GLASS – transparent plate in an automobile used for outside viewing and as a shield against outside weather

DOOR HANDLE REMOVER – tool for extracting inside door handles

DRILL BIT – sharp metal rod with auger spiral which is inserted into a drill

DROP LIGHT – light mounted on an electrical cord

EXTENSION – a section forming an additional length

EXTENSION CORD – long cord making possible extra length

FEATHER EDGING – the act of tapering the edge of damaged paint

FENDER – the outer panel located at the front end of a car connecting the front sheet metal; serves to deflect water and mud thrown by the front wheels

FENDER INNER SHIELDS – piece of metal covering the top and inner side of a tire which deflects mud, sand, and water

FIGURE 8 SCREWDRIVER – tool for driving screws with figure 8 heads

FLEXIBLE SPINNER HANDLE – handle into which is fitted a flexible screwdriver blade

FLOOR JACK – hydraulic jack mounted on a portable base; used for lifting

FRAME STRUCTURE – a structure on which parts are installed to complete a unit

GAS TANK – container for fuel supply

GRAVEL DEFLECTOR – panel between the grill and the bumper

GRILL PANEL – the structure which serves both as a tie bar for the front fenders and as a beautifying element

GRINDING SHIELD – plastic shield used to protect the eyes

HACKSAW – a fine-tooth saw with blade under tension in a bowshaped frame for cutting metal

HAMMER – a hand tool consisting of a solid head set on a handle and used for pounding

HEADLAMPS – the largest units of an automobile lighting system

HINGES – metal pieces used for attaching any swinging part

HOOD – the panel anchored to the front of an automobile by hinges or springs; serves as a cover for the motor and as an insulator

HYDRAULIC – term used to describe that which is operated by the pressure transmitted when a liquid is forced through a comparatively small tube

IMPACT PANEL CUTTER – machine powered by air pressure which cuts metal by the back and forth movement of a chisel blade

INSTALLATION – the act of connecting one or more units

KANSAS JACK – portable pulling device for body work

LACQUER – a durable, natural, or synthetic spirit varnish

LEAD PADDLE – a one-piece spatula-shaped wooden paddle used for spreading hot lead

LEADING – process of filling a dent with heated lead by hitting and smoothing with a wooden paddle

LINE UP PUNCH – tapered rod, sharp on one end, used to align holes

MASKING TAPE – tape used to cover the surfaces not to be painted

MECHANICAL FINGERS – hand device used in handling objects in hard-to-reach places

METAL DOLLY BLOCK – metal block used for shaping metal with a hammer

MILL FILE – hand tool used for precision filing

NEEDLE NOSE PLIERS – pair of sharp pointed pliers used for work in close places

OPEN END WRENCH – a wrench open on one end

PAINT THINNER – a solvent used to thin paint

PATCH PANEL – a piece of metal installed to repair a portion of a damaged panel

PHILLIPS HEAD SCREWDRIVER – tool used for driving screws with crossed, slotted heads

PISTOL GRIP DRILL – portable drill with an electric motor used in drilling holes

PLASTIC FILLER – (Bondo) filler made of plastic used for repairing damaged areas to produce a smooth surface

PLASTIC WIPER – (Bondo wiper) flat, flexible pad used for smoothing plastic filler

PLIERS – hand tool used for gripping

PORTABLE GRINDER – a moveable machine used for removing excess materials by action of abrasive wheels or belts upon the material

PORTER POWER JACK – light weight hydraulic lift which can be used in any position

PRIMER – paint product applied to fill low places in preparation for painting

PRIZE BAR – metal bar used for pressing out dents in the body of an automobile

PUNCH – rod-like tool with a tapered or straight shank at one end

QUARTER PANEL – the rear section of a car, composed of the outer panel, inner panel, and extensions

RATCHET – a wheel or bar with teeth that come against a catch so that motion is permitted in one direction but not in the other

RADIATOR – the automobile cooling system for both the motor and transmission

RADIATOR SUPPORT – the unit which holds the radiator reservoir and serves as a tie bar for the entire sheet metal structure

REPAIR – to reshape a broken or bent part to its original contour

RETARDER – a solvent added to paint to prolong drying time

RIVET – a metal object, much like a bolt, which is used to fasten two pieces of metal

RIVET GUN – special device used for clinching rivets

ROCKER PANEL – reinforcement of the floor pan to strengthen the body. Located at each side of the bottom and serves as a step plate

ROOF PANEL – part of body structure covering the top of an automobile

RUBBER BLOCK – a hard rubber square used for block sanding

RUBBER MALLET – rubber-tipped hammer

RUBBING COMPOUND – substance in paste form applied to new paint to achieve a fine finish

SANDING – process of smoothing a surface with an abrasive using either hand or machine

SCRATCH ALL – ice pick for aligning holes

SEATS – upholstered sitting area of an automobile

SNATCH BAR – pulling hammer

SOCKET SET – wrench with circular head which fits snugly the complete circumference of a bolt or nut

SOLDER – an alloy used in the soldering process

SOLDERING IRON – heavy piece of metal heated by electricity and used to apply solder

SPEED HANDLE – metal rod with crank handle which is attached to a socket

SPINNER HANDLE – handle into which small socket may be inserted

SPRAY GUN – an adjustable apparatus for applying paint in the form of a spray

TAC-RAG – sticky cloth used for picking up lint or dust particles before applying paint

TINSNIPS – shears used for cutting light metal

TOOL BOX – container for hand tools

TORCH LIGHTER – flint used for igniting a torch

TRIM PAD REMOVER – tool for removing trim tacks

TRIM PANEL – upholstery on inside of door

TWO-BY-FOUR – piece of lumber used to spread the impact of hammer when aligning metal

UNIVERSAL JOINT SOCKET ADAPTER – that part of a socket set which allows the exertion of pressure from an angle

VISE – tool having adjustable jaws for holding work

VISE GRIPS – pliers with locking features

VIXEN FILE – curved tooth body file

WATER SANDING – process by which a surface is sanded or smoothed by use of water and sandpaper. May be done by hand or by machine

WELDING GOGGLES – glasses used for the protection of the eyes during welding

WINDSHIELD – transparent plate, usually glass, extending across the front of an automobile which serves as windbreaker and eye shield

WIRE BRUSH – stiff brush used for removing rust

GLOSSARY FOR AUTO MECHANICS

ADAPTER – device by means of which objects of different size are made interchangable

ADVANCE – means to set the ignition timing so a spark occurs earlier

AMBIENT – surrounding; as ambient temperature or surrounding temperature approximately 1/4" away from surface

AMMETER – device which registers the amount of electrical current passing through it

AMPERE – unit for measuring the quantity of electrons flowing

ANODE – the positive pole in an electrical circuit

ARMATURE – the revolving member of a generator

ARMATURE COIL – a section of armature winding prepared on a form to the exact shape required to fit into the slots of the armature core

BEARING – area or unit in which the contacting surface of a revolving part rests

BLOCK – that part of the engine containing the cylinders

BORE – refers to the cylinder or to the diameter of the cylinder

BUSHING – a metallic substance which forms a friction type bearing; may be a leveling substance between two plates

CAM – device which changes rotary motion to linear motion

CAMBER – tilt of a wheel outward or inward at top or bottom of wheel assembly

CARBON MONOXIDE – poisonous gas caused by incomplete burning of gasoline or other fuels

CARBURETOR – device used to mix gasoline and air in the correct proportions

CAR STAND – a simple device to support the weight of the car off the floor

CASTER – tilt of the front suspension or spindle forward or aft

CATHODE – negative pole in an electrical circuit

CHASSIS – term which denotes everything in the car except the body and fenders; the underpart of an automobile

CHOCK – a wedge or block for steadying a body and holding it motionless

CLEARANCE – given amount of space between two parts

CIRCUIT BREAKER – a combination relay and solenoid; also a protective device used for overloaded circuit

COMBUSTION – the act or state of burning

COMPRESSION – pressure applied to a gas causing a reduction in volumn

CONDENSE – to change a vapor back into a liquid

CONNECTING ROD – the connecting link between the piston and the crankshaft

COOLANT – liquid in a cooling system

CRANKCASE – that part of the engine that surrounds the crankshaft

DAMPENER – a unit used on the front end of the crankshaft to reduce engine vibration

DIELECTRIC – an insulator

DIRECTION OF CURRENT FLOW – current always flows from negative to positive

DISTORTION – a change from normal in shape or size

DRILLING – operation of producing a circular hole by removing solid metal

ECCENTRIC – off center

ENGINE – power generating unit of a car

ENGINE DRAG – the friction between the engines many moving parts that come into contact with each other

EXHAUST – the hollow casting through which the gasses from the various cylinders are conducted on their way through the exhaust pipe and through the muffler

EXPANDER – device installed to increase size as within a piston or under rings

FINS – functional form to direct air and absorb temperature for cooling

FLUID FRICTION – resistance of a liquid to flowing

FRAME – foundation on which the car is built; provides support for the engine, power train, wheels, springs, brakes, and steering system

FRICTION – a force that interferes with the sliding motion of one body over another

GALLING – a characteristic of metals which causes them to seize or "freeze" when brought into intimate contact with each other under pressure and no lubricant

GASKET – a special lining used for packing or sealing; a unit used between two pieces or objects for the purpose of sealing

GRINDING – an operation which removes a small amount of metal from the surface of stock by abrasion

GROWLER – an audible testing device for armatures

HONE – to sharpen, enlarge, or smooth with a fine-grit stone called a hone

HOUSING – a casing or container with or without a cover to enclose parts of any kind

HYDROMETER – device used to measure specific gravity

HYPOID – refers to a set of gears wherein the pinion intersects the ring gear below the center line of the rear axle shaft; used to lower body level, for greater pinion teeth contact with ring gear, and for longer life of ring gear and pinion

I. D. – inside diameter

IN-LINE ENGINE – engine in which all cylinders are arranged in a straight row

INTERNAL COMBUSTION ENGINE – an engine which burns fuel internally

IMPULSE – refers to momentary acceleration given to the speed of engine crankshaft by starter motor armature to produce starting, increase of vacuum, or advance of timing position

JET – small hole used to control the flow of gasoline in various parts of the carburetor

KEY – a straight or half-moon shaped piece of metal which fits into slots in the shaft and hub on a pulley or gear; key locks the pulley or gear to the shaft

LINKAGE – movable bars or links connecting one unit to another

LOCK WASHER – washer used between nut or head of a bolt or screw and the machined part

MACHINING – term used to describe operations involving the use of machines which have been used to change the shape, refinish and surface, or drill a hole

MAGNETIC SWITCH – unit used to complete another circuit

MICROMETER – device to measure accurately to one-thousandth of an inch

MIKE – short term for micrometer, or the use of one

MILLING – an operation on metal surfaces by rotary cutters to shape, finish, or transform

MOTOR – a device which operates on power from another source

PARTS COMMON – a term used to mean gas line fittings, rivets, bolts, nuts, screws, pipe fittings, etc., used on all models of cars, trucks, tractors, lawn mowers, chain saws, and small engines

PLATE – to deposit on a surface

PRIMARY CIRCUIT – the part of the system which develops the power to car voltage for use by all circuits in the primary system

PUNCH – rod-like tool with a tapered or straight shank at one end (Starting punches are often called drifts)

REAMING – an operation in which the inside of a hole is sized and finished by the use of a reamer

RECIPROCATING ACTION – back and forth movement such as the action of the pistons

RECIRCULATING BALL WORM AND NUT – a popular type of steering gear utilizing a series of ball bearings that feed through and around and back through the grooves in the worm and nut

REGULATOR – a device to reduce and control pressure

RELAY – an electromagnetic switch

RESISTANCE – electrical friction

RESISTOR – device placed in a circuit to lower voltage

RHEOSTAT – a device for regulating electrical current, in which the current is made to flow through wires having considerable resistance

RING JOB – reconditioning the cylinders and installing new rings

ROTOR – a rotating unit for distributing current from a center point to as many connections as may be desirable to use

SCORE – a scratch or groove on a finished surface

SEAL – a unit installed to prevent lubrication from flowing

SEAT – the stationary part which when the valve head or plunger is in a closed position provides a leak-proof contact

SHIM – a thin spacer installed between two units to increase the distance between them

SLUDGE – creamy black deposit with the consistency of soft mud formed when water mixes with engine oil

SOLDERING – process involving use of heat and a fusible alloy called solder to bind metals together

SOLENOID – an electromagnet with a movable soft iron core

SOLID FRICTION – may be sliding or rolling friction

SPLINE – a key in the form of a flat strip for insertion in a slot or groove between parts; in automobiles, splines

STATOR – a small hub with vanes affixed radially that is so placed that oil leaving the torque convertor turbine strikes the stator vanes and is redirected into the pump at an angle to develop high efficiency

STRUT – an aligning unit used for alignment in any direction–up, down, across, or lengthwise

SYCHRONIZE – to bring about timing which will cause two or more events to occur simultaneously

TACHOMETER – device which indicates the speed of the engine in rpm

TAPERING – a sizing operation for round work, considering (1) amount of taper per foot; (2) large diameter; (3) length of taper; (4) small diameter

TAPPET – a unit used between cam shaft and valve push rod to operate the valve operating mechanism properly

TIMING – adjustment of valves and crankshaft of an engine in their relative position to produce the greatest effective output in horsepower; the point at which ignition breaker is set in relation to top dead-center position of the piston to secure the greatest effective expansive force upon head of piston

TORQUE – a turning effect

TORUS – unit used for developing power through the use of oil by both a driving and a driven unit

TRANSFORMER – a device whereby electrical currents are changed in regard to voltage and amperage from high to low, or vice versa

VALVE PORTS – openings leading into the cylinders

VENTURI – a restriction in the air stream which reduces the pressure around the fuel delivery nozzle so that liquid gasoline sprays out in the form of a fine mist

VISCOSITY – evidenced by the resistance of liquids to flow

VOLTAGE – electrical pressure

WATER JACKET – area around the cylinders and valves that is left hollow so the water can enter for cooling

GLOSSARY
FOR
AUTOMOBILE SERVICE STATION ATTENDANT

ADDITIVE – a substance added to another in relatively small amounts to impart or improve desirable properties or suppress undesirable properties

ALIGNMENT – process of arranging or placing in line; as, to line shafting; also spelled aline

ALTERNATOR – an electric generator for producing alternating current

ANTIFREEZE – a substance added to a liquid to lower its freezing point

BALANCER – a machine containing rotating parts in which weights are shifted until the wheel is in perfect balance

BATTERY – a number of primary or secondary cells grouped together as a single source of electricity; a term commonly, though incorrectly, applied to a single cell

BEAD – the tire edge used for the purpose of stiffening or strengthening

BLOCK (scotch) – a chock to prevent rolling or slipping

CARBON – a nonmetallic chiefly tetravalent element found native in petroleum

CHAMOIS – a soft fine leather prepared from various skins. It is used for polishing

CORROSION – chemical action which causes destruction of the surface of a metal, usually by oxidation or rusting

CRANE – a machine for hoisting and lowering heavy weights; consists of a vertical post or frame which rotates on its axis, and a jib or projecting arm over which a chain or rope passes on its way from the winch at the foot of the post to the load to be lifted

CREDIT CARD – a card issued and presented in lieu of payment made at a later date

CREEPER – a low platform supported on small casters or rollers, on which an auto repairman may lie while working on a car

DEFLATE – to release air or gas from

DEICER – solution (usually in a spray dispenser) used to spray on windshields and other glass surfaces to melt frost or ice

DEPRESSANT – agent that reduces functional activity

DETERGENT – term which applies to any of numerous, synthetic, water soluble or liquid organic preparations that are different from soaps but resemble them in the ability to emulsify oils and hold dirt in suspension

DIPSTICK – long metal stick inserted into oil to determine amount of oil contained in tank

DISPLAY – to spread out before the view of people; to show off for the purpose of increasing interest in sales

DISTILLED WATER – water which has been boiled, converted into steam, and condensed again with the purpose of killing any bacteria and freeing the water from impurities which may be held in solution

ELECTRODES – in a primary cell, the plates immersed in the exciting fluid or electrolyte

ELECTROLYTE – the solid or fluid mass through which the current passes between anode and cathode; any substance which undergoes chemical decomposition by the direct action of an electric current passing through it

EVAPORATION – the process by which any substance is converted from a liquid or solid state into and carried off in a vapor

FENDER COVER – a cloth or cloth-lined cover used on the fender to prevent soiling and/or scratching the fender surface

FIBER (cord) – any tough threadlike substance used for base of tire

FILTER – a porous mass through which a gas or liquid is passed to separate matter in suspension; an apparatus containing a filter medium

GAP – a space between two high-potential terminals (as of an induction coil) through which pass discharges of electricity

GASKET – any ring or washer of packing; a thin sheet used in making joints

GASOLINE – a highly volatile product formed by the distillation of crude petroleum

GREASE – oily matter; a thick lubricant

HOIST – a name applied to a mechanism which raises things

HUB-CAP – metal cap which covers the central portion of a wheel from which the spokes radiate and which is bored for the reception of the axis

HYDROMETER – instrument constructed for the purpose of determining the specific gravity of a liquid

INFLATE – to swell or distend with air or gas

INHIBITOR – an agent that slows or interfers with a chemical reaction

INSULATOR – a conductor which offers a tremendously high resistance to the passage of electricity

ISLAND – related to the service station, island refers to each area of cluster of pumps in the driveway

JACK – a device which supports or holds a vehicle in position for lifting or elevating from the floor surface

KEROSENE – a mineral hydrocarbon oil distilled from petroleum or coal oil

LUBRICANT – oil or unguent used to diminish friction in working parts

LUBRICATION – the process of making smooth or slippery with a substance capable of reducing heat friction and wear when introduced as a film between solid surfaces

LUG – the projection upon which the lug nut is tightened to hold the wheel securely in place

MALLET – a large hammer of soft material

METER – the device (on a gas pump - or otherwise) used to measure and record the amount

NOZZLE – the vent or projecting end of the hose used to direct gasoline flow into gasoline tank of car

OIL – any of numerous unctuous (smooth, greasy, oily) combustible substances that are liquid or at least easily liquifiable on warming, are soluble in ether but not in water, and leave a greasy stain on paper or cloth

PLY – one of several layers of cloth, cord, strands of yarn, usually sewn or laminated together

POST – piece of metal fastened rigidly in an upright position; also refers to terminals of battery

PRESSURE CAP – cap covering the radiator; used to contain radiator fluids at consistent pressure level

PUNCTURE – a pricking or perforation of an inflated rubber automobile tire by contact with some sharp substance on the roadbed, etc.

RACK – a frame or stand on which articles are placed for storage and/or display

RADIATOR – in a vehicle, a device for cooling internal substances

RIM – border, edge, or margin of a thing, as the rim of a wheel

ROTATION – refers to the systematic changing of tires to other positions on the car to provide for more even wear of tire

SCOTCH (block) – a chock to prevent rolling or slipping

SEAL – a tight or perfect closure or device to prevent the passage of gas, water, or other liquid into a pipe or container

SHIMMYING – shaking, quivering, or trembling; vibrating abnormally as in automobiles

SPARK PLUGS – a part which fits into the cylinder head of an internal combustion engine

SPECIFICATIONS – a document setting forth the various requirements, conditions, and stipulations with regard to dimensions, quality of material, class of workmanship, tests or trial performances, of anything about to be manufactured or built

SPECIFIC GRAVITY – the weight of a given substance relatively to an equal bulk of some other substance taken as a standard of comparison

STOCK – term which applies to the supply of items carried on inventory for sale to the public

SUCTION – act or process of drawing in—as, a liquid into a chamber or pump, by removing the air pressure from the surface of the liquid in the supply pipe, the external pressure of the atmosphere causing the fluid to rise in the pipe and enter the pump or chamber

SYNTHETICS – substances which are man-made and are devised, arranged or fabricated for special situations to imitate or replace the usual real substance

TANK – receptable of a vehicle used to hold fuel

TENSION – the degree of stretching to which a wire cord, etc. is strained by drawing it in the direction of its length; may refer to leads of a secondary circuit

TERMINAL – device attached to the end of a wire or cable or to an electrical apparatus for convenience in making connections

TORQUE – a turning effect

TRANSMISSION – term applied to means of transmitting and transforming power as in a car

TREAD – the part of a tire which bears upon the road

VAPOR – the semi-gaseous state of a substance which is a liquid at ordinary temperatures

VENT – an outlet, usually small, for the passage of something; as air or water out of a confined place

VIBRATION – a quivering or trembling motion; term used to describe jerkiness produced by faulty operation of an engine in a car or truck

VISCOSITY – quality or state of being viscous—that is, thick and gluey

VOLATILITY – state or quality of easily passing from a liquid into a gaseous state

VOLTMETER – device or instrument used to indicate one or more ranges of volts and amperes by changing terminal connections

GLOSSARY
FOR
AUTOMOBILE SERVICE MECHANIC

ADAPTER – device by means of which objects of different size are made interchangeable

ADDITIVE – a substance added to another in relatively small amounts to impart or improve desirable properties or suppress undesirable properties

ADVANCE – means to set the ignition timing so a spark occurs earlier

ALIGNMENT – process of arranging or placing in line; as, to line shafting; also spelled aline

ALTERNATOR – an electric generator for producing alternating current

AMBIENT – surrounding; as ambient temperature or surrounding temperature approximately 1/4" away from surface

AMMETER – device which registers the amount of electrical current passing through it

AMPERE – unit for measuring the quantity of electrons flowing

ANODE – the positive pole in an electrical circuit

ANTIFREEZE – a substance added to a liquid to lower its freezing point

ARMATURE – the revolving member of a generator

ARMATURE COIL – a section of armature winding prepared on a form to the exact shape required to fit into the slots of the armature core

BALANCER – a machine containing rotating parts in which weights are shifted until the wheel is in perfect balance

BATTERY – a number of primary or secondary cells grouped together as a single source of electricity; a term commonly, though incorrectly, applied to a single cell

BEAD – the tire edge used for the purpose of stiffening or strengthening

BEARING – area or unit in which the contacting surface of a revolving part rests

BLOCK (scotch) – a chock to prevent rolling or slipping

BORE – refers to the cylinder or to the diameter of the cylinder

BUSHING – a metallic substance which forms a friction type bearing; may be a leveling substance between two plates

CAM – device which changes rotary motion to linear motion

CAMBER – tilt of a wheel outward or inward at top or bottom of wheel assembly

CARBON – a non-metallic chiefly tetravalent element found native in petroleum

CARBON MONOXIDE – poisonous gas caused by incomplete burning of gasoline or other fuels

CARBURETOR – device used to mix gasoline and air in the correct proportions

CAR STAND – a simple device to support the weight of the car off the floor

CASTER – tilt of the front suspension or spindle forward or aft

CATHODE – negative pole in an electrical circuit

CHAMOIS – a soft fine leather prepared from various skins. It is used for polishing.

CHASSIS – term which denotes everything in the car except the body and fenders; the underpart of an automobile

CHOCK – a wedge or block for steadying a body and holding it motionless

CLEARANCE – given amount of space between two parts

CIRCUIT BREAKER – a combination relay and solenoid; also a protective device used for overloaded circuit

COMBUSTION – the act or state of burning

COMPRESSION – pressure applied to a gas causing a reduction in volume

CONDENSE – to change a vapor back into a liquid

CONNECTING ROD – the connection link between the piston and the crankshaft

COOLANT – liquid in a cooling system

CORROSION – chemical action which causes destruction of the surface of a metal, usually by oxidation or rusting

CRANE – a machine for hoisting and lowering heavy weights; consists of a vertical post or frame which rotates on its axis, and a jib or protecting arm over which a chain or rope passes on its way from the winch at the foot of the post to the load to be lifted

CRANKCASE – that part of the engine that surrounds the crankshaft

CREDIT CARD – a card issued and presented in lieu of payment made at a later date

CREEPER – a low platform supported on small casters or rollers, on which an auto repairman may lie while working on a car

DAMPENER – a unit used on the front end of the crankshaft to reduce engine vibration

DEFLATE – to release air or gas from

DEICER – solution (usually in a spray dispenser) used to spray on windshields and other glass surfaces to melt frost or ice

DETERGENT – term which applies to any of numerous, synthetic, water soluble or liquid organic preparations that are different from soaps but resemble them in the ability to emulsify oils and hold dirt in suspension

DIELECTRIC – an insulator

DIPSTICK – long metal stick inserted into oil to determine amount of oil contained in tank

DIRECTION OF CURRENT FLOW – current always flows from negative to positive

DISPLAY – to spread out before the view of people; to show off for the purpose of increasing interest in sales

DISTILLED WATER – water which has been boiled, converted into steam, and condensed again with the purpose of killing any bacteria and freeing the water from impurities which may be held in solution

DISTORTION – a change from normal in shape or size

DRILLING – operation of producing a circular hole by removing solid metal

ELECTRODES – in a primary cell, the plates immersed in the exciting fluid or electrolyte

ELECTROLYTE – the solid or fluid mass through which the current passes between anode and cathode; any substance which undergoes chemical decomposition by the direct action of an electric current passing through it

ENGINE – power generating unit of a car

ENGINE DRAG – the friction between the engines many moving parts that come into contact with each other

EVAPORATION – the process by which any substance is converted from a liquid or solid state into, and carried off in, a vapor

EXHAUST – the hollow casting through which the gasses from the various cylinders are conducted on their way through the exhaust pipe and through the muffler

EXPANDER – device installed to increase size as within a piston or under rings

FENDER COVER – a cloth or cloth-lined cover used on the fender to prevent soiling and/or scratching the fender surface

FIBER (cord) – any tough threadlike substance used for base of tire

FILTER – a porous mass through which a gas or liquid is passed to separate matter in suspension; an apparatus containing a filter medium

FINS – functional form to direct air and absorb temperature for cooling

FLUID FRICTION – resistance of a liquid to flowing

FRAME – foundation on which the car is built provides support for the engine, power train, wheels, springs, brakes, and steering system

FRICTION – a force that interferes with the sliding motion of one body over another

GALLING – a characteristic of metals which causes them to seize or "freeze" when brought into intimate contact with each other under pressure and no lubricant

GAP – a space between two high-potential terminals (as of an induction coil) through which pass discharges of electricity

GASKET – a special lining used for packing or sealing; a unit used between two pieces or objects for the purpose of sealing

GASOLINE – a highly volatile product formed by the distillation of crude petroleum

GREASE – oily matter; a thick lubricant

GRINDING – an operation which removes a small amount of metal from the surface of stock by abrasion

GROWLER – an audible testing device for armatures

HOIST – a name applied to a mechanism which raises things

HONE – to sharpen, enlarge, or smooth with a fine-grit stone called a hone

HOUSING – a casing or container with or without a cover to enclose parts of any kind

HUB-CAP – metal cap which covers the central portion of a wheel from which the spokes radiate and which is bored for the reception of the axis

HYDROMETER – instrument constructed for the purpose of determining the specific gravity of a liquid

HYPOID – refers to a set of gears wherein the pinion intersects the ring gear below the center line of the rear axle shaft; used to lower body level, for greater pinion teeth contact with ring gear, and for longer life of ring gear and pinion

I. D. – inside diameter

IMPULSE – refers to momentary acceleration given to the speed of engine crankshaft by starter motor armature to produce starting, increase of vacuum, or advance of timing position

INFLATE – to swell or distend with air or gas

INHIBITOR – an agent that slows or interferes with a chemical reaction

IN-LINE ENGINE – engine in which all cylinders are arranged in a straight row

INSULATOR – a conductor which offers a tremendously high resistance to the passage of electricity

INTERNAL COMBUSTION ENGINE – an engine which burns fuel internally

ISLAND – related to the service station; island refers to each area or cluster of pumps in the driveway

JACK – a device which supports or holds a vehicle in position for lifting or elevating from the floor surface

JET – small hole used to control the flow of gasoline in various parts of the carburetor

KEROSENE – a mineral hydrocarbon oil distilled from petroleum or coal oil

KEY – a straight or half-moon shaped piece of metal which fits into slots in the shaft and hub on a pulley or gear; key locks the pulley or gear to the shaft

LINKAGE – movable bars or links connecting one unit to another

LOCK WASHER – washer used between nut or head of a bolt or screw and the machined part

LUBRICANT – oil or unguent used to diminish friction in working parts

LUBRICATION – the process of making smooth or slippery with a substance capable of reducing heat, friction, and wear, when introduced as a film between solid surfaces

LUG – the projection upon which the lug nut is tightened to hold the wheel securely in place

MACHINING – term used to describe operations involving the use of machines which have been used to change the shape, refinish and surface, or drill a hole

MAGNETIC SWITCH – unit used to complete another circuit

MALLET – a large hammer of soft material

METER – the device (on a gas pump or otherwise) used to measure and record the amount

MICROMETER – device to measure accurately to one-thousandth of an inch

MILLING – an operation on metal surfaces by rotary cutters to shape, finish or transform

MOTOR – a device which operates on power from another source

NOZZLE – the vent or projecting end of the hose used to direct gasoline flow into gasoline tank of car

OIL – any of numerous unctuous (smooth, greasy, oily) combustible substances that are liquid or at least easily liquifiable on warming, are soluble in ether but not in water, and leave a greasy stain on paper or cloth

PARTS COMMON – a term used to mean gas line fittings, rivets, bolts, nuts, screws, pipe fittings, etc., used on all models of cars, trucks, tractors, lawn mowers, chain saws, and small engines

PLATE – to deposit on a surface

PLY – one of several layers of cloth, cord, strands of yarn, usually sewn or laminated together

POST – piece of metal fastened rigidly in an upright position; also refers to terminals of battery

PRESSURE CAP – cap covering the radiator; used to contain radiator fluids at consistent pressure level

PRIMARY CIRCUIT – the part of the system which develops the power to car voltage for use by all circuits in the primary system

PUNCH – rod-like tool with a tapered or straight shank at one end (starting punches are often called drifts)

PUNCTURE – a pricking or perforation of an inflated rubber automobile tire by contact with some sharp substance on the roadbed, etc.

RACK – a frame or stand on which articles are placed for storage and/or display

RADIATOR – in a vehicle, a device for cooling internal substances

REAMING – an operation in which the inside of a hole is sized and finished by the use of a reamer

RECIPROCATING ACTION – back and forth movement such as the action of the pistons

RECIRCULATING BALL WORM AND NUT – a popular type of steering gear utilizing a series of ball bearings that feed through and around and back through the grooves in the worm and nut

REGULATOR – a device to reduce and control pressure

RELAY – an electromagnetic switch

RESISTANCE – electrical friction

RESISTOR – device placed in a circuit to lower voltage

RHEOSTAT – a device for regulating electrical current, in which the current is made to flow through wires having considerable resistance

RIM – border, edge, or margin of a thing, as the rim of a wheel

RING JOB – reconditioning the cylinders and installing new rings

ROTATION – refers to the systematic changing of tires to other positions on the car to provide for more even wear of tire

ROTOR – a rotating unit for distributing current from a center point to as many connections as may be desirable to use

SCORE – a scratch or groove on a finished surface

SCOTCH (block) – a chock to prevent rolling or slipping

SEAL – a tight or perfect closure or device to prevent the passage of gas, water, or other liquid into a pipe or container

SEAT – the stationary part which when the valve head or plunger is in a closed position provides a leak-proof contact

SHIM – a thin spacer installed between two units to increase the distance between them

SHIMMYING – shaking, quivering, or trembling; vibrating abnormally as in automobiles

SLUDGE – creamy black deposit with the consistency of soft mud formed when water mixes with engine oil

SOLDERING – process involving use of heat and a fusible alloy called solder to bind metals together

SOLENOID – an electromagnet with a movable soft iron core

SOLID FRICTION – may be sliding or rolling friction

SPARK PLUG – a part which fits into the cylinder head of an internal combustion engine

SPECIFIC GRAVITY – the weight of a given substance relatively to an equal bulk of some other substance taken as a standard of comparison

SPECIFICATIONS – a document setting forth the various requirements, conditions, and stipulations with regard to dimensions, quality of material, class of workmanship, tests or trial performances, of anything about to be manufactured or built

SPLINE – a key in the form of a flat strip for insertion in a slot or groove between parts; in automobiles, splines

STATOR – a small hub with vanes affixed radially that is so placed that oil leaving the torque convertor turbine strikes the stator vanes and is redirected into the pump at an angle to develop high efficiency

STOCK – term which applies to the supply of items carried on inventory for sale to the public

STRUT – an aligning unit used for alignment in any direction–up, down, across, or lengthwise

SUCTION – act or process of drawing in–as a liquid into a chamber or pump by removing the air pressure from the surface of the liquid in the supply pipe, the external pressure of the atmosphere causing the fluid to rise in the pipe and enter the pump or chamber

SYNCHRONIZE – to bring about timing which will cause two or more events to occur simultaneously

SYNTHETICS – substances which are man-made and are devised, arranged or fabricated for special situations to imitate or replace the usual real substance

TACHOMETER – device which indicates the speed of the engine in rpm

TANK – receptable of a vehicle used to hold fuel

TAPERING – a sizing operation for round work, considering (1) amount of taper per foot; (2) large diameter; (3) length of taper; (4) small diameter

TAPPET – a unit used between cam shaft and valve push rod to operate the valve operating mechanism properly

TENSION – the degree of stretching to which a wire cord, etc., is strained by drawing it in the direction of its length, may refer to leads of a secondary circuit

TERMINAL – device attached to the end of a wire or cable or to an electrical apparatus for convenience in making connections

TIMING – adjustment of valves and crankshaft of an engine in their relative position to produce the greatest effective output in horsepower; the point at which ignition breaker is set in relation to top dead center position to secure the greatest effective expansion force upon head of piston

TORQUE – a turning effect

TORUS – unit used for developing power through the use of oil by both a driving and a driven unit

TRANSFORMER – a device whereby electrical currents are changed in regard to voltage and amperage from high to low, or vice versa

TRANSMISSION – term applied to means of transmitting and transforming power as in a car

TREAD – the part of a tire which bears upon the road

VALVE PORTS – openings leading into the cylinders

VAPOR – the semi-gaseous state of a substance which is a liquid at ordinary temperatures

VENT – an outlet, usually small, for the passage of something; as air or water out of a confined place

VENTURI – a restriction in the air stream which reduces the pressure around the fuel delivery nozzle so that liquid gasoline sprays out in the form of a fine mist

VIBRATION – a quivering or trembling motion; term used to describe jerkiness produced by faulty operation of an engine in a car or truck

VISCOSITY – quality or state of being viscous–that is, thick and gluey

VOLATILITY – state or quality of easily passing from a liquid into a gaseous state

VOLTAGE – electrical pressure

VOLTMETER – device or instrument used to indicate one or more ranges of volts and amperes by changing terminal connections

WATER JACKET – area around the cylinders and valves that is left hollow so the water can enter for cooling

GLOSSARY
FOR
BUSINESS OCCUPATIONS

ACCOUNTING – a system of recording and summarizing business and financial transactions in books as well as verifying the results

ADDING MACHINE – a device used to add figures

ADDRESSOGRAPH – a machine that uses a chemical or a photocopier to reproduce addresses on labels

ADJUSTMENTS – the correcting of an account for merchandise that has been damaged or returned

AIRMAIL – mail delivered to and from destinations by airplane

ALPHABETICAL – the arrangement of names or listings in the order of the alphabet

APPLICATION – a letter or form requesting employment or service

AUTOMATIC – a self-acting or self-regulating mechanism

AUTOMATION – the state of being operated automatically

BACKSPACE – the striking of the backspace key to bring type to desired place

BENEFITS – a payment or service provided for under an annuity; financial help in time of sickness

BALANCE SHEET – a financial statement, assets, liabilities and net worth of a business at a stated time

BLOCK STYLE – a style of typing where each line of the inside address and complimentary close and the paragraphsbeginsat the left margin

BOLDFACE – a heavy type that stands out clearly

BOOKKEEPING – the recording of accounts or transactions of a business

BONDS – an interest bearing certificate of public or private indebtedness

CABINET – a case or cupboard having doors, drawers or shelves used for storage purposes

CABLEGRAM – a message sent overseas by a submarine telegraph cable

CALCULATOR – a machine that performs mathematical operations

CARBON – a sheet of coated black, dark blue, or other colored paper whose color can be transferred to another source by impression

CERTIFIED – to state as being true or as represented; to meet a standard; to inform with certainty

CHECK – a written order instructing a bank to pay as directed

CHRONOLOGICAL FILING – an arrangement of a list by order of occurrence

C.O.D. – cash on delivery

CODING – the process of naming data for filing, by marking, underscoring, or other identification prior to filing

COLLATERAL – property used to serve to insure fulfillment of a contract

COLLATING – the collecting and arrangement of pages in proper order into sets

COMPLIMENTARY CLOSE – the closing of a letter

COMPUTER – an automatic electronic machine for performing calculations, for sorting data, and similar functions

COPYHOLDER – a device that holds copy in a convenient position for the typist

CROSS REFERENCE – a process designed to locate items under more than one name or subject

COUNTERFEIT – an imitation or copy of something else, with the intention to deceive

CYCLE BILLING – the cycle mailing of statements to different groups of customers at different times of the month

DICTATION – the act of uttering words to be written by another

DIVIDENDS – a share of profits distributed to stock holders

DUPLICATOR – a machine for making copies of typed or written material

ELITE – type which provides 12 characters to the linear inch and 6 lines to the vertical inch

ERROR – a mistake; an unintentional deviation from accuracy or truth

ENDORSING – the process of transferring title; to scribe one's signature on the back of a check

ENVELOPE – a flat pocket-like paper container for a letter

FILE – to arrange in order for preservation or reference; a container for paper storage

FILING – the act of placing records or other data in the proper place

FINANCIAL – of or relating to money

FORM – a printed or typed document with blank spaces for insertion of required or requested information

FLOW CHART – a diagram or chart showing the flow of supplies and equipment in a business

FREIGHT – goods for transportation; a payment for the transportation of goods

GEOGRAPHIC FILING – the organization or grouping of items filed by location of city or state

GROSS PROFIT – an overall total of the selling price of goods in excess of their cost

HANDBOOK – a book or manual for handy reference concerning information about a company or a subject

HECTOGRAPHIC – a method of making duplicate copies using aniline dye with a gelatin or chemical process

I.B.M. – International Business Machines

INCOME TAX – a tax on the net income of an individual or business concern

INDENT – to space in from the margin

INTERCOM – an intercommunication exchange system with microphone and loudspeaker at each station for localized use

INTERVIEW – a formal consultation to evaluate a prospective employee

INVENTORY – an itemized list of current assets

INVESTMENT – a sum of money placed in goods or property the purpose of which is to profit financially

INVOICE – an itemized list of goods shipped, specifying the price and the terms of sale

KEY-PUNCH – a machine having a keyboard similar to that of a typewriter used to record or code information by punching cards

LEDGER – a book used for recording accounts

LEGAL – of or pertaining to law

LOG – a record of performance by time and place

OFFICE – a position of responsibility; a place in which professional people conduct their business

OFFSET – to place over

MANUSCRIPT – a written or typewritten composition or document

MARGIN – the part of a page outside the main body

MEMORANDUM – an informal record or written reminder

MICROFILM – a film bearing a photographic record on a reduced scale

MIMEOGRAPH – a duplicator which utilizes a stencil through which ink is pressed to make many copies

PAR VALUE – face value of securities or certificates of value; the price at which securities are issued

P.B.X. – private-business-exchange

PHOTOCOPY – a photographic machine used to make photographic copies of printed, written, or pictorial matter

PHOTOSTAT – a device used to make a photographic copy upon the surface of prepared paper

PICA – a size of type which provides ten letters to a linear inch

PROOFREAD – to read and correct any errors found in a written, typed, or printed work

PROGRAMMING – the working out of a sequence of coded instructions to be fed to a computer

RECEPTIONIST – one employed to greet customers

REFERENCE – source of information; a statement of qualifications of a person seeking employment

REGISTER – a book or system of records; to enroll officially

REQUISITION – a written request for supplies, materials or goods

REPLY – an answer given by oral or written communication

ROUTE SLIP – a list of names or initials of people who should see a circular, instruction sheet or special bulletin for the purpose of marking off each name after the materials are read

SEMIBLOCK – a style of letter writing where each line of the inside address begins at the left margin, while each new paragraph is indented

STENOGRAPHER – one employed chiefly to take and transcribe dictation

STOCK – the equipment, materials, or supplies of an establishment; a unit of ownership in a concern

SWITCHBOARD – a panel or frame with insulated connections for receiving and making telephone calls

TABULATOR – a business machine which sorts and selects information from marked or perforated cards; key or system on a typewriter used for indenting

TELEGRAM – a fast means of communicating over long distances by an apparatus called the telegraph; a message sent by wire and transcribed on paper

TELEPHONE – an instrument for reproducing sounds received at short or long distances

TRANSCRIBE – to write down, or record

VOUCHER – a verification of a business transaction

XEROX – a photocopy machine

GLOSSARY
FOR
COOK (HOTEL AND RESTAURANT)

MENU TERMS

A la (ah lah) – In the mode or fashion of; to the, or in; as in la Creme, with cream; A la Moutarde in mustard

A la carte – On the menu, but not part of a complete meal, usually prepared as ordered

A la king – Served in cream sauce containing green pepper, pimento and mushrooms

A la mode – Topped with ice cream

A la Newburg – Creamed dish with egg yolks added, originally flavored with line and/or sherry

Amandine – Served with almonds

Au Gratin (o'grat-on) – Made with crumbs, scalloped; often refers to dishes made with a cheese sauce; acceptable way to serve left-over vegetables

Au jus (o'zhus) – Meat served in its natural juices or gravy

Bavarian Cream – A gelatin dish into which whipped cream is folded as it begins to stiffen

Bisque (bisk) – A thick soup usually made from fish or shellfish; also a frozen dessert, ice cream with finely chopped nuts

Consomme (con-so-may) – A clear soup usually made from 2-3 kinds of meat

Creole (kre'ol) – Relating or peculiar to the Creoles, made with tomatoes, peppers, onions, and other seasonings; applies to soups, garnishes, sauces, etc. so prepared

Entree (on-tray) – Main course

Gumbo – Okra; a rich, thick, creole soup containing okra

Hors d'oeurve (or-duh-vr) – Side dish or relish served at the beginning of a meal

Julienne (zhu-lyayn) – Vegetables cut into fine strips or shreds; named from a famous chef

Jus (zhus) – Juice or gravy. Au jus meat served in its natural juices or gravy

Kosher (ko'sher) – Jewish term; meat slaughtered and prepared in accordance with the Jewish requirements

Lyonnaise (lyo-nayze) Seasoned with onions and parsley, as lyonnaise potatoes

Minestrone (mee-nays-tro'ne) – Famous Italian thick vegetable soup

O'Brien – Cubed potatoes cooked in a small amount of fat with chopped onion and pimento

Petits Four (puh-tee foor) – Small fancy cakes

Puree (pu-ray) – Foods rubbed through a sieve; also a nutritious vegetable soup in which milk or cream is seldom used

Ramekin (ram'e-kin) – Small, individual baking dish or a pastry shell; also a cheese cake

Roux (roo) – Browned flour and fat used for thickening sauces, stews, etc.

Scallion – Any onion which has not developed a bulb

Shallott – Onion having a stronger but more mellow flavor than the common variety

Torte – Rich cake made from crumbs, eggs, nuts, etc.

COOKERY TERMS

Baking – Cooking by dry heat, usually in an oven; term used interchangeably with Roasting when applied to meats in uncovered containers

Basting – Moistening meat or other food while cooking to add flavor and to prevent drying of the surface; melted fat, meat drippings, water, etc. may be used

Beating – A brisk regular motion that lifts a mixture over and over and thereby introduces air or makes the mixture smooth

Whipping – Rapid beating to increase volume by the incorporation of air

Stirring – Mixing food materials with a circular motion

Mixing–Blending – To unite 2 or more ingredients

Fold-in – To combine ingredients very gently with an up and over motion by lifting one up and over the other

Blanching – To bring ingredients to boiling point, usually vegetables to kill the further growth of enzymes; this procedure is applied to frozen vegetables. To cook in hot deep fat for a short time until clear but not brown

Boiling – Cooking in water or a liquid, mostly water, in which the bubbles are breaking on the surface and steam is given off

Simmering – Cooking in liquid in which bubbles form slowly and break just below the surface

Stewing – Simmering in a small amount of liquid

Steaming – Cooking in steam with or without pressure

Scalding – Heating a liquid to a point just below boiling

Steeping – The process of extracting flavors, colors, or other qualities by adding boiling water and allowing the mixture to stand

Searing – Browning surface of meat by the application of intense heat for a short time

Braising – Cooking slowly in a covered utensil in a small amount of liquid; meat stock, water, milk, or cream may be used as the liquid

Broiling – Cooking by direct heat; this may be done by placing the food under or over a clear flame

Roasting – Cooking uncovered by dry heat; the term is usually applied to meat

Pot-Roasting – Cooking large cuts of meat by braising

Frying – Cooking in hot fat; if cooked in a small amount of fat it is called Sauteing or Pan Frying; if cooked in deep fat to cover food is called Deep Fat Frying

Fricasseeing – Cooking by browning in a small amount of fat, then stewing or steaming; often applied to poultry or veal cut into pieces

Parboiling – Partially cooking a food by boiling, the cooking being completed by another method

Scalloping – Baking food, usually cut into pieces or sliced and covered with a liquid or sauce and crumbs

Breading – Dipping a food into an egg-milk mixture and then into fine dry crumbs

Dredge – Coating or sprinkling a food with flour or other fine substance

Chopping – Cutting food into fairly fine pieces with a knife or other sharp tool

Creaming – The working of one or more foods until soft and creamy; this term applied to the mixing of fat and sugar

Cutting in – The combining of a solid fat with dry ingredients by a horizontal motion with knives, use of a pastry blender, or a dough hook

Marinating – Placing a food into a marinade for a period of time for the purpose of enhancing flavor or to increase tenderness; mixture usually contains an oil-acid mixture such as vinegar and oil or french dressing seasoned with herbs and spices

Cube – To cut into approximately 1/4-1/2 inch squares

Dice – Cutting into cubes

Chop – To cut into pieces with a knife or chopper

Mince – Cutting or chopping food into very small pieces; not so fine and regular as grinding, yet finer than those produced by chopping

Shred – To cut or tear into thin strips or pieces using a knife or shredder attachment

Scoring – Making shallow lengthwise and crosswise slits on the surface of meat

Sugar – Refers to granulated unless otherwise specified in recipe

Toast – To brown surface of a food by application of dry heat

Truss – To bind or fasten together, usually applying to poultry

BAKING TERMS

Absorption – The property of flour to absorb and hold liquid

Acidity – Sourness or tartness in a food product; a condition indicating excess fermentation in yeast doughs; a factor used with soda for leavening cake

Bleached flour – Flour treated to remove its natural color and make it white

Self-Rising flour – Contains leavening and salt

Bran – Skin or outer covering of wheat

Butterscotch – A flavor produced by the use of butter and brown sugar

Caramelized Sugar – Dry sugar heated with constant stirring until melted and dark in color, used for flavoring and coloring

Carbon dioxide – A colorless, tasteless edible gas obtained during fermentation or from a combination of soda and acid

Creaming – The process of mixing and aerating shortening and another solid, such as sugar or flour

Creampuffs – Baked puffs of creampuff dough which are hollow; usually filled with whipped cream or cooked custard

Crescent rolls – Hard-crusted rolls shaped into crescents, often with seeds on top

Crullers – Long, twisted, baking powder doughnuts

Crusting – Formation of dry crust on surface of doughs due to evaporation of water from surface

Currant – Berry of a shrub, usually dried

Danish pastry – A flaky yeast dough having butter or shortening rolled into it

Dry yeast – A dehydrated (water removed) form of yeast

Eclair – A long thin shell of same mixture as creampuffs

Emulsification – The process of blending together fat and water solutions of ingredients to produce a stable mixture which will not separate on standing

Fat absorption – Fat which is absorbed in food products as they are fried in deep fat

Fermentation – The chemical changes due to action of living organisms (yeast or bacteria) usually producing a leavening gas

Finger roll – A bun about 5 inches long and 1 inch wide

Fluff – A mixture of beaten egg white, air, and crushed fruit

Foam – Mass of beaten egg and sugar

Fold – To lap yeast dough over onto itself; with cake batter, to lift and lap the batter onto itself to lightly incorporate ingredients

Fondant – Creamy smooth confection

French bread – An unsweetened crusty bread, baked in a narrow strip and containing little or no shortening

Glaze – Sugar so treated as to resemble ice coating

Glucose – Corn sugar

Gluten – The elastic mass that is formed when flour is mixed with water as in breads

Hot cross buns – Sweet, spicy, fruity buns with cross cut on top which usually is filled with a plain frosting

Leavening – Raising or lightening by air, steam, or gas (carbon dioxide) usually yeast or baking powder used in batters and doughs

Marble cake – A cake of two or more colored batters partially mixed

Melting point – The temperature at which a solid becomes a liquid

Meringue – A white frothy mass of beaten egg whites and sugar

Mocha – A flavor combination of chocolate and coffee but predominately that of coffee

Parkerhouse rolls – Folded buns of fairly rich dough

Puff paste – A pastry dough interlayered with butter or shortening to attain flakiness

Quick breads – Bread products baked from a chemically leavened batter (baking powder or soda)

Rocks – Small rough-surfaced fruited cookies made from a stiff batter

Scaling – Apportioning batter or dough according to unit of weight

Sifting – Passing through fine sieve for blending and to remove lumps

Snaps – Small cookies that run flat during baking and become crisp on cooling

Solidifying Point – Temperature at which liquid changes to a solid

Tarts – Small pastries with heavy fruit filling or cream

Wash – A liquid brushed on the surface of an unbaked or baked product (may be water, milk, starch solution, thin syrup, or egg)

Zwieback – A toast made of bread or plain coffee cake dried in a slow oven

GLOSSARY
FOR
ELECTRONICS MECHANIC

abc – automatic brightness control

ABERRATION – the failure of all light rays in an optical system to come into the same focus as in television

ABSORPTION – the process of causing to be taken up; absorption of energy by dielectrics (insulating material in a capacitor) is more likely to occur at very high frequencies

AC – abbreviation for alternating current

ACCELERATION – rate of velocity change

ACCELERATOR – the anode of a cathode ray tube which increases the velocity of the stream of electrons through the tube

AC-DC – means the equipment or device is capable of operating from either alternating current or from direct current as the principal power source

AC SPECTRUM – term which applies to the frequencies of alternating currents such as 25, 50, and 60 cycles/second in power systems, kilocycles and megacycles in audio and radio frequency systems

ADAPTER – a device to temporarily or permanently change the terminal connections of a circuit or part

ADF or adf – automatic direction finder; electronic device synonymous to automatic radio compass

ADMITTANCE – opposite of impedance

AERIAL – a system of wires or electrical conductors used for reception of transmission of radio waves

AF – audio frequency

AIR GAP – a path where electrical or magnetic energy passes through air

ALIGN – to adjust one or more circuits to operate to previously determined specifications

ALTERNATING CURRENT – current which results from a surging back and forth of electrons in power lines

ALTERNATOR – device for producing alternating current

AM – amplitude modulation

AMPLIFICATION – process of increasing the strength of current, signal, voltage, or power, by vacuun tubes or by transistors or other solid state devices

AMPLITUDE – largest value of a sine wave measured from zero

ANODE – the electrode to which the main electron stream flows

ARC – a discharge of electricity across a gap in a circuit or between electrons

CABLE – grouped insulated wires

CAPACITANCE – the property of an electric non-conductor that permits the storage of energy as a result of electric displacement when opposite surfaces of the non-conductor are maintained at a difference of potential; opposition

CATHODE – electron-emitting electrode of a radio tube

CATHODE RAY – a ray or beam of electron from a cathode

CIRCUIT – a path over which an electric current can flow

COMPUTER – an electronic device used for rapidly solving very complex problems

CONDUCTANCE – the readiness with which a conductor transmits an electric current

CURRENT – movement of electrons through a conductor

DC – abbreviation for direct current: a current which flows in only one direction

DIELECTRIC – insulating material between the plates of a capacitor, or between any two parts of an electronic circuit (generally air, mica, paper, oil, cloth, ceramic, or glass)

DIODE – component having two electrodes, one being the cathode and the other the plate or anode

DISPERSION – separation of a beam of light into its various color components

ELECTROMOTIVE FORCE – force which causes current to flow in a circuit

FARAD – a unit of capacitance

FREQUENCY – the number of complete cycles or vibrations per unit of time, usually per second

GAIN – ratio of output voltage, current or power to the input voltage, current, or power respectively in an amplifier stage, receiver or system

GAP – the distance between poles as of a recording head

GERMANIUM – a grayish-white, brittle metallic element used in electronic applications (transistors or rectifiers); a semi-conducting element used extensively in diodes, rectifiers, transistors, and other solid-state electronic devices

GRID – an electrode consisting of a mesh or spiral of fine wire in an electrode tube

GROMMET – an insulating washer, usually of rubber or plastic, used to prevent a wire from touching the sides of that through which it passes

HEAT LOSS – power dissipated as heat

HEAT SINK – any device that absorbs and draws off heat from a hot object, re-radiating it into the surrounding atmosphere

HELICAL – spiral; coin-shaped

"HOT" – not grounded; term applied to any connected, alive, or energized wire, terminal, or ungrounded conductor

hp – abbreviation for horsepower

HYDROMETER – instrument used to measure specific gravity of liquids

IMPEDANCE – total opposition a circuit offers to the flow of alternating current

INDUCTANCE – property of a coil or part which tends to prevent any change in current flow; present only when varying or alternating currents are present

INDUCTION – process by which an object is electrified, magnetized, or given an induced voltage by exposure to a magnetic field

IN STEP – in phase

INTENSITY – strength or value of a current

LASER – an optical maser which amplifies light by stimulating atomic radiation within a ruby crystal; light energy is used for excitation

LEVEL – the mean amplitude of a variable quantity as applied especially to sound or radio waves

MEG or MEGA – a prefix meaning one million times

MISMATCH – condition existing when the impedance of a source does not match or equal the impedance of the connected load

MODULATION – the variation of the amplitude, frequency, or phase of a carrier or signal in telegraphy, telephone, radio, or television

MUTUAL CONDUCTANCE – transconductance; a conductance involving two circuits

OSCILLATION – system or circuit fluctuations; pertains particularly to those where the flow of charges alternates in opposite directions

OUT OF PHASE – term applied to wave forms of the same frequency but not passing through corresponding values of voltage or current at the same time

OUTPUT – usable energy delivered

OVERLOAD – a load greater than a device can handle

PEAKS – brief high amplitude levels which occur in electronic equipment

p.f. – abbreviation for power factor; means a rating found by dividing the resistance of a part or circuit by its impedance at operating frequency

phi (also written ϕ) – symbol for magnetic flux pi – means 3.1416 or the ratio of the circumference of a circle to its diameter

PIEZOELECTRIC – term applied to electricity generated as a result of pressure

PULSE – brief surge of voltage or current

RANGE – extent of coverage or effectiveness

REACTANCE – the part of the impedance of an alternating current circuit due to inductance or capacitance or both; expressed in ohms

REFLECTION – directional change of waves after they hit a surface

RESISTANCE – the opposition offered by a body or substance to the passage through it of a steady electric current

SILICON – a semi-conducting element used extensively in diodes, rectifiers, transistors, and other solid-state electronic devices

SINE WAVE – wave form corresponding to a pure, single frequency oscillation

SOLID STATE – examples of solid state devices are transistor, diode, capacitors, condensors

TETRODE – a four-electrode vacuum tube

THERMISTOR – an electrical resistor made of a material whose resistance varies sharply in a known manner with the temperature; an application is the measurement of microwave or infrared power

THERMOCOUPLE – a thermal junction; a pair of dissimilar conductors joined together so that an electromotive force is developed by the thermoelectric effects when the two junctions at opposite ends are at different temperatures; a device which generates electricity when heated

TRANSISTOR – a term used to describe a variety of solid-state devices that can be used to control the flow of electric current

TOLERANCE – the permissible variation from rated or assigned value

TRANSFORMER – electrical device which transfers electrical energy by electromagnetic induction from one or more circuits to one or more other circuits; or may be used to step up or down voltage without affecting frequency

WATT – unit of electric power; equal to volts multiplied by amperes

GLOSSARY
FOR
FARMER GENERAL

ABORTION – giving birth prematurely

ACID – relates to a class of substances which are soluble in water, sour in taste, and which cause litmus paper to turn red

ACRE – a unit equal to 160 square rods; or 43,560 square feet

ACUTE DISEASE – disease having a sudden onset, sharp rise, and short course; disease having severe symptoms and coming speedily to a crisis

AGGREGATE – any of several hard, inert materials used for mixing with a cementing material to form concrete, mortar, or plaster; a clustered mass of individual soil particles varied in shape and ranging in size from a microscopic granule to a small crumb, and considered the basic structural unit of soil

ALKALI – relates to class or substances having basic properties and the ability to neutralize acids; turns litmus paper blue

ALTERNATOR – an electric generator for producing alternating currents

AMPERE – unit of intensity of electric current

AMMETER – an instrument for measuring electric current in amperes

ANNUAL PLANTS – plants lasting only one year or one growing season; plants which complete their entire life cycle and produce seeds in one season

ANTIBIOTIC – an antibacterial substance produced by a living organism; a substance produced by a microoganism and able in dilute solution to inhibit or kill another microorganism

ARBITRATION – settlement of a dispute

ARTIFICIAL INSEMINATION – breeding of stock by hand using previously collected semen

AVAILABLE NUTRIENTS – nutrients in a form capable of being assimilated by growing plants

BACTERIA – group of single-celled microorganisms

BALANCED RATION – a given amount of feed containing the necessary nutrients required for a given livestock for a designated time

BAND APPLICATION – to spread seed, fertilizer, chemicals, etc. only in a band over an area (usually in a row)

BANKRUPTCY – the state of being legally insolvent or legally declared unable to pay a debt

BIENNIAL PLANTS – plants which complete their life cycle in two years or two growing seasons

BOARD FOOT – a unit of quantity for lumber – one foot long, one foot wide, and one inch thick (12" x 12" x 1")

BROADCAST APPLICATION – to spread seed, fertilizer, chemicals, etc. over a complete or broad area

CARBOHYDRATES – a major class of foods; any of various neutral compounds of carbon, hydrogen, and oxygen (sugars, starches, and celluloses) most of which are formed by green plants

CARBURETOR – an apparatus for supplying an internal-combustion engine with vaporized fuel mixed with air in an explosive mixture

CHRONIC DISEASE – disease which continued for a long period of time

CONCENTRATES – livestock feeds containing relatively large amounts of nutrients

CONDUCTOR – substance or body capable of transmitting electricity, heat, or sound readily

CONFISCATION – the act of taking over property by public authority

CONTRACT – an oral or written agreement between two or more people

CREEP FEEDING – feeding of young livestock in addition to the milk being received from the dam

CROSSBREEDING – mating of different breeds of stock

DAM – the female parent

DECIDUOUS TREES – trees which lose their leaves each year

DEPRECIATION – the decline in value of an asset due to wear, age, etc.

DIGESTIBLE – that which can be absorbed into the bloodstream of an animal through the stomach, large and small intestine

DURABILITY – the ability to last for a period of time; to last or wear for a long time

ECONOMICS – the science having to do with material means of satisfying human desires; social science concerned chiefly with description and analysis of the production, distribution, and consumption of goods and services

ECONOMY – the structure of economic life in a country, an area, or a period; the management of farm affairs with special regard to productiveness and expenses

ENTERPRISE – an undertaking; usually means a crop or livestock undertaking

FARM RECORDS – a continuous recording of all farm business transactions taking place over the period of one year; should be cumulative for income tax purposes and for efficient planning

FARROWING – to bring forth young (as of swine)

FERTILIZER – a substance used to make soil more fertile

FERTILIZER GRADE – the guaranteed minimum percentage of total nitrogen, available phosphoric acid, and soluble potassium

FORAGE CROPS – crops raised for the feeding of animals; usually considered a crop of which the animal eats the entire plant; (grain crops usually are not considered forage crops)

FUNGICIDE – the chemicals which kill certain fungus

GENERATOR – a machine by which mechanical energy is converted to electrical energy

GESTATION – the period of carrying young in the uterus

GROSS EXPENSE – the total of all values given out

GROSS INCOME – the total of all values taken into possession

HERBICIDE – chemicals which kill certain plants

HORIZONTAL – on the level; parallel to the horizon

HUMUS – a brown or black complex variable material resulting from decomposition of plant or animal material and forming the organic portion of the soil; the well-decomposed, stable part of the organic matter of the soil

HYDRATED LIME – calcium hydroxide; produced by treating burned lime with water or steam

INBREEDING – mating of closely related livestock; may be applied to plants also

INOCULATE – to invest with bacteria as mixing bacteria with seed to stimulate nitrogen fixation; also animals; to introduce a serum into

INTRAMUSCULAR INJECTION – an injection into the muscle

INTRAVENOUS INJECTION – an injection into a vein

JOIST – timbers or beams ranged parallel-wise from wall to wall to support the floor or ceiling

LACTATION – the giving of milk by the mammary glands; the period in the life of the dam when she gives milk to raise the young

LEGUME – applied to a group of plants having the ability, with the aid of certain bacteria, to extract nitrogen from the air and to deposit it in nodules on its roots

LIMING MATERIAL – a material whose calcium and/or magnesium content is capable of neutralizing soil acidity

MANUFACTURING MILK – a low grade of milk used for making butter, cheese and other uses except for liquid whole milk consumption

NET INCOME – that which is left after gross expenses are subtracted from gross income

NUTRIENT – that part of food which can be utilized by the body

ORGANIC MATTER – material derived from plant or animal sources

PARASITE – a plant or animal living in, on, or with another plant or animal at whose expense it obtains its food, shelter, etc.

PARENT MATERIAL – material from which the soil is developed; usually found under the sub-soil

PERPENDICULAR – at right angles to a flat or given surface

PERENNIAL PLANTS – plants which have a life cycle longer than two years

PESTICIDE – chemicals which kill certain pests, usually insects

POST-EMERGENCE APPLICATION – to spread fertilizer, chemicals, etc. over a field after the field's crop emerges from the soil

PRIMARY PLANT NUTRIENTS – those nutrients guaranteed in commercial fertilizers, namely nitrogen, phosphorus, and potassium

PROTEIN – a class of naturally occurring combinations of amino acids which are essential for the well-being of animals

PUBERTY – the age of being first capable of begetting or bearing offspring

PULPWOOD – wood used for making paper

RESISTOR – substance which does not allow the passage of electricity or heat through itself readily

ROUGHAGE – livestock feeds containing high amounts of fiber and relatively small amounts of nutrients

SIRE – the male parent

SOIL TEST – the act of sampling the soil in a given field and analyzing the sample to determine the amount of plant nutrients present

STEAMED BONE MEAL – bones which have been steamed and ground; used in livestock feeding as a calcium and phosphorus source

SUBCUTANEOUS INJECTION – an injection of medication under the skin

SUB-SOIL – that portion or layer of the soil usually found under the top soil

TACHOMETER – an apparatus which registers the revolutions of a turning wheel or shaft for a given time

TANKAGE – means ground meat, organs, intestine, etc., being a by-product of meat-packing industries and used as a protein supplement for swine, chickens, etc.

TATTOO – to mark or color the skin by pricking in coloring matter; usually done for marking purposes

TOPOGRAPHY – the configuration of a surface of land including its relief, the position of its streams, roads, buildings, etc.

TOP SOIL – that portion or layer of the soil which contains organic matter; the most productive layer found as the uppermost layer of the soil

UREA – a nitrogen compound which can be used as a protein supplement for livestock

VENEER TIMBER – timber which can be sliced or shaved into thin sheets; usually large timber of very high quality

VERTICAL – on the plumb; upright; perpendicular to the plane of the horizon

VOLT – a unit of electromotive force

WARRANT – that which vouches for, or guarantees, or gives authority

WATT – a unit used to measure electrical power

GLOSSARY
FOR
MACHINE OPERATOR

ABRASIVE – substance used for smoothing, grinding, or polishing

ALLOY – mixture of two or more metals to change the characteristics of the original metal

ANNEALING – process by which hardened steel is made soft; process of heating to a critical temperature and cooling slowly to soften metal, reduce brittleness, and make it more workable

ARBOR – part used to clamp milling cutter to the shaft; holds the cutter

ASSEMBLY – a unit fitted together from manufactured parts

BENCH – work table equipped with vise and other implements to facilitate work performed on it

BENCH TOOL – tool used at a bench or work table

BEVEL – angle formed by a line or a surface that is not at right angles to another line or surface; straight angle cut

BORING – operation of enlarging and truing a hole with a single point tool

BUFFING – process of bringing out the luster of metal by polishing and finishing

CALIBRATION – marking of measurement on a ruler or scale; ascertaining the amount of variation from absolute accuracy in a scientific instrument

CALIPER – tool for measuring diameter of circular work; an instrument with two legs fastened together at one end and used to measure the thickness of objects, the width of short spaces between surfaces

CAM – a rotating or sliding piece or projection as on a wheel; moved by a roller, pin, etc. working against its edge; used to transpose rotary motion into an alternating, reciprocating, or back and forth motion

CAPACITY – power; quantity of electricity

CASE HARDENING – a process of surface hardening involving a change in the composition of the outer layer of an iron-base alloy

CHIPS – tiny bits of metal removed in the machining process

CHUCK – a mechanism fixed to the mandrel of a turning lathe for holding the material to be operated upon; a part of a tool which can grip things; an adjustable work-holding device

CLAMP – tool for holding portions of work together, both wood and metal

CONCAVE – a hollow curved surface; curving in, as the bowl of a spoon

CONVEX – a curved surface which is high in the center; rounded like the outside of any part of a globe or ball; curving outward

COUNTERBORE – enlarging a hole to a given depth and diameter

COUNTERSINK – chamfering a hole to receive a flat-head screw; also tapering or beveling the end of a hole with a conical cutting tool

CREST – top surface joining the two sides of a thread

DEPTH – distance from the crest to the root of the thread

DRILLING – cutting round holes by use of a cutting tool sharpened on its point

FACE – to make a flat surface by machining

FILE CARD – brush for cleaning files

FIT – clearance or interference between two mating parts

FLANGE – a rib or offset on a casting; surface projecting beyond another surface

FLUTE – a concave channel made in metal; groove of a drill or a reamer; carries out the chips and admits a coolant

GAUGE – a tool or device used for checking metal parts to determine whether they are made within specified limits

GEARS – toothed wheels which transmit rotary motion from one shaft to another shaft without slippage

GRINDER – a mechanical device for removing metal by abrading or grinding

GRADUATIONS – lines that indicate points of measurement on measuring tools or on machine dials

HARDENING – any process of increasing hardness of metal by suitable treatment usually involving heating and cooling

HELIX – a curve or the path a point generates as it moves at a fixed rate of advance on the surface of a cylinder

HONING – process used to produce an extremely fine surface on an object after the grinding operation; process of finishing internal or external cylindrical surfaces to a high degree of accuracy

KEYWAY – slot or recess in a shaft that holds the key for the purpose of binding something, as a crank, gear, or pulley on a shaft

KNURLING – process of embossing the surface of a workpiece with a knurling tool; operation in which grooved, hardened steel wheels or knurls are pressed into the surface of cylindrical work rotating in a lathe to produce uniform rows of serrations for decoration or to make a better grip

LAPPING – process of finishing external or internal surfaces with very fine abrasive

LATHE – machine used for production of circular work; machine in which work is held and rotated while being shaped

LAYOUT – to scribe or locate points for machining operations; planning or marking out to full size, the development or pattern for shopwork

MACHINE – to shape a material by cutting away, using a machine

MACHINABILITY – the quality or characteristic of a material that describes the ease or difficulty of machining it

MACHINE TOOL – term used to describe those machines which as a group can reproduce themselves

MACHINIST – one skilled in the operation of machine tools

MAJOR DIAMETER – largest or outside diameter of the thread

METRIC – decimal system of weights and measures based on multiples of ten

MINOR DIAMETER – smallest or inside diameter of a thread or nut

O.D. – abbreviation for outside diameter

PITCH – distance of a point on a thread to the same point on the next thread

RADIAL – rotating; having a common center; can be rotated anywhere on its circumference; extending outward from a center or axis

REAMING – process of finishing a hole to close tolerance with a reamer; process of perfecting holes that have previously been drilled or bored

ROOT – bottom surface between two adjacent threads

RPM or rpm – abbreviation for revolutions per minute

SCRIBE – to draw a line with a scriber or other pointed tool

SET UP – term used to describe positioning of the workpiece, attachments, and cutting tools on a machine

SPINDLE – a rotating rod or arbor, either hollow or solid; usually the work driving member of the machine

SPOT FACING – operation of smoothing and squaring the surface; machining around the top of a hole to produce a bearing surface against which a washer, nut, or the head of a cap screw may be brought flat

SURFACE PLATE – working surface for layout and checking purpose; a large plate of cast iron whose surface is made perfectly flat to use for testing flat surfaces

SWIVEL – to swing in an arc; to rotate

TAP – tool used to cut internal threads

TAPER – gradual decrease in diameter so as to assume a conical shape; regularly narrowed toward a point

TAPPING – operation of producing internal threads using a cutting tool called a tap

TEMPERING – reheating iron based alloys after hardening to some temperature below the critical range followed by desired rate of cooling to reduce brittleness and increase toughness

THREADING – cutting of screw threads internal or external

TOLERANCE – permissible variation from a basic dimension; an allowable limit between dimensions

TURN – to shape by cutting a material as it is revolving in a lathe

WORKING DRAWING – orthographic projection of views

GLOSSARY
FOR
POWER SAW MAN

ANTISEPTIC – a substance that checks the growth of germs in or on living tissue

ARTIFICIAL RESPIRATION – the rhythmic forcing of air into and out of the lungs of a person whose breathing has stopped

BIND – position of log at cut where pressure restricts free action of the saw

BOLT – a block of timber to be sawed or cut; a short round section of a log

BUCKING – process of cutting the log into correct length

BUTT – term used to indicate the larger end of a log

CANT HOOK – snub-nosed pole with duck-bill hook

CLEARING – removal of wood and brush from land or in work area where trees are being felled

FELLING – process of cutting the tree correctly so it will fall to the area planned

GLUT – a wooden wedge

HORSEPOWER – unit of power equivalent to 550 foot pounds of work per second

KICKBACK – sudden movement of saw back toward the operator

LIMBING – the process of cutting small limbs and branches from the tree

LUBRICATE – use of grease or oil to make smooth or slippery for the purpose of reducing friction, heat, or wear

MARKETING – act or process of selling or purchasing in a market

PEAVEY – pole with sharp steel tip or pick, with duck-bill hook

PICKAROON – a device used to steer and place logs in the truck

PILING – means same as stacking logs or yarding

PINCH – same as bind

PROTRACTOR – an instrument used to measure degrees

PULPWOOD – wood used in making pulp for paper

PUSH POLE – a pole used to push and control the direction of fall of a tree

SCALING – process of measuring or estimating the sound content of logs

SKIDDING – process of sliding along the ground the logs fastened by a chain to mule, horse, or tractor to get them to the stacking, yarding, or loading area

SOFTWOOD – wood which comes from needle-bearing trees, such as pines, firs, and other evergreens

SWAMP OUT – process of removing underbrush and debris

STUMP – the part of a tree left in the ground after the trunk has been cut

TENSION (chain) – tightness or looseness

TONGS – grasping device commonly consisting of two sharp-pointed pieces jointed at one end by a pivot or hinged like scissors

Loading tongs – tongs used to aid in loading logs
Skidding tongs – tongs used in skidding

TOURNIQUET – a devise to stop bleeding; may be a bandage twisted tight with a stick

WEDGE – a piece of a substance that tapers to a thin edge and used to split wood; also used to separate or force apart a log in which the saw binds

GLOSSARY FOR SHEET METAL

A.C. – refers to alternating current

ACETYLENE – a colorless gas which burns with a brilliant white light and is used for welding metals

A.I.S.I. – American Iron and Steel Institute

ALLOY – mixture of two or more metals to change the characteristics of the original metal

ALUMINUM – a nonferrous metal extracted from bauxite

ANNEALING – process by which hardened steel is made soft; process of heating to a critical temperature and cooling slowly to soften metal, reduce brittleness, and make it more workable

ANVIL – a tool used by craftsmen to design metal into graceful bends and scrolls

ARC WELDING – a method of welding whereby an electric arc is used to produce the heat for melting metal

AUGER BIT – a spiral-like, screw-shaped tool, used to bore holes in wood and drill holes in metal

BAR FOLDER – a machine used to bend or fold sheet metal to an angle or to form a lock

BELLOWS – an instrument used to direct and generate air flow

BLOW PIPE – a small tubular instrument for directing a jet of air or other gas into a flame in order to concentrate heat wherever needed

BRASS – an alloy consisting primarily of copper and zinc, usually two parts cooper to one part zinc; proportion may vary according to use

BRITTLENESS – property which causes metal to crack or break without changing its shape

BUFFING – the process of giving a smooth, lustrous, high gloss finish to a metal surface by polishing and cleaning

BURRING – the method of forming a projecting edge by forming projecting edge

C-CLAMP – a c-shaped instrument for holding steady any work to be planed, sawed, drilled, shaped, sharpened, riveted, or glued

CALIPER – a measuring device used to gauge the distance between inside and outside surfaces

CASE HARDENING – a process of surface hardening involving a change in the composition of the outer layer of an iron-base alloy

CASTING – process of forming molten metal by pouring it into a mold of the desired configuration

CENTER PUNCH – a tool used for marking the center of a hole to be drilled

CHUCK – a mechanism fixed to the mandrel of a turning lathe for holding material to be operated upon; a part of a tool which can grip things; an adjustable work-holding device

CIRCUMFERENCE RULE – a measuring device which has two edges one graduated into sixteenths while other edge shows the circumference for the diameter

COLD WELD – process of fusing two metals together by applying adequate pressure

COMBINATION SQUARE – a measuring device equipped with a square head projector and center head used for testing and checking trueness of an angle or laying out liner on materials before cutting

COPPER – a common reddish metal that is ductile and malleable and is one of the best conductors of heat and electricity

CORNICE BEND – a machine used for making bends which are too large or heavy to be made on the bar folder

CORROSIVENESS – the action, process, or effect of wearing away gradually usually by chemical action

COTTER KEYS – instruments used to secure castellated nuts on bolts and rods; also used as stops and holders on shafts and rods

COUNTERSINK HOLE – the process of making a 60-degree chamfer around the inside edge of a drilled hole

CRIMPING – the process of decreasing the perimeter of a cylindrical pipe so it will fit into the original diameter

CROWBAR – a heavy steel bar about 5 feet in length (one end is square in cross section, and has a wedge-shaped point)

CRUCIBLE – a clay or graphite pot or container used for the melting of non-ferrous metals

DECIMAL EQUIVALENTS – chart used to convert common fractions to decimals or decimals to common fractions

DEPTH GAUGE – instrument used for measuring any specified depth

DIE – a tool or device for imparting a desired shape, form, or finish to a material or for impressing an object or material

DIMENSION LINES – horizontal or vertical lines with arrows at each end locating and stating required dimensions

DRAWING OUT – process used in forging when the need for lengthening a piece of stock is required and the reduction of the stock is not critical

DRILL PRESS – machine used for accurately drilling holes with various size bits

DRILLING BIT – an attachment for a brace, used for boring or drilling holes

DUCTILE METAL – metal which can be shaped by twisting, bending, or stretching without breaking or cracking

DUCTILITY – the property which enables metals to be drawn out thin without breaking

DYE – used to color surfaces of metal where scribed lines can be identified

ETCHING – process of producing a design by the chemical action of an acid on the metal

FERROUS – pertains to iron; usually a term applied to metals with high iron content

FILE (Flat) – a hand tool rectangular in shape tapered both in thickness and width; double-cut and used for rough general filing

FILE (Half Round) – double-cut file used for filing convex and concave surfaces

FILE (Mill) – a hand tool with single-cut teeth, rectangular shaped, uniform in thickness; tapers in width over its entire length

FILE (Round) – commonly called rattail; used for enlarging holes and filing inside a rounded edge; circular in shape and tapers toward the point; double-cut

FILE (Triangular) – commonly called three-square double-cut file used in sharp corners and finishing out square holes

FLASK – a wooden or metal frame in which a foundry mold is rammed

FORGING – the shaping of heated metal over an anvil with various kinds of hammers and tools

FRAMING SQUARE – an instrument used for checking for squareness and measuring and laying off angles

FUSIBILITY – the characteristic of liquifying when heated

GALVANIZE – to coat with zinc on metal

GOGGLES – scientifically colored glasses for welders to protect their eyes from the rays of the welding arc

GRINDER – a machine used for sharpening or shaping steel

HACK SAW – a fine-tooth saw with blade under tension in a bow-shaped frame; used for cutting metal

HARDNESS – the property that makes metal resist penetration or keeps it from bending and being distorted

HEM – a border bend used to stiffen an article or conceal a sharp edge on sheet metal

HORIZONTAL OR VERTICAL METAL BAND SAW – saw used for making straight cuts on metal

IMPURITIES – dirt or other foreign matter in a weld

INTERMITTENT WELD – weld broken by unwelded spaces; does not have continuity

KNURLING – process of embossing the surface of a work piece with a knurling tool; operation in which grooved, hardened steel wheels or knurls are pressed into the surface of cylindrical work rotating in a lathe to produce uniform rows of serrations for decoration or to make a better grip

LAP JOINT – a welded joint in which two overlapping parts are connected by means of fillet, plug, slot, spot, or seam welds

LAYOUT – the process of transferring measurements from a drawing to metal

MALLET – a hammer-like tool with a large head for driving another tool or for striking a surface without marring it

MALLEABILITY – property of metals which allows them to be bent or distorted in shape without rupture

MOLD – a form usually made of sand used for casting metal objects

MEASURING TAPE – a flexible measuring device

MICROMETER (Outside) – a precise measuring instrument which is used for outside measurements in thousandths of an inch

NON-FERROUS – metals containing no ferrite, or iron; examples: copper, brass, bronze, aluminum, and lead

OVERLAP – protrusion of weld metal at the toe of a weld beyond the limits of fusion

OXYGEN – non-metallic element found nearly everywhere in nature, either in free state or in combination with other elements

PEENING – process of decorating the surface of soft metals by striking metal with peen end of ball peen hammer

PIPE CUTTERS – a hand tool comprising a grasping device and three sharp-edged wheels forced inward by screw pressure cut into the pipe

PLANE – a specified area which has no elevations or depressions

PLIERS – a hand tool used for holding and clamping object

PYROMETER – an instrument for measuring temperatures

RIVET SET – tools used to set and head the rivets

RIVETS (Tinners) – a handed pin or bolt of metal used for uniting two or more pieces (sizes are indicated by the weight per thousand)

SCRIBER – a sharp pointed instrument used to make reference lines on metal

SCROLL – a circular design used in ornamental iron work

SEAMING – the joining together of two or more metal surfaces

SHAPER – a large metal cutting tool used for changing the configuration of metal surfaces

SHEET METAL – metal in the form of a sheet

SOLDERING – process of using a metal or metallic alloy at low temperature to unite with another metal

SPRING DIVIDER – an instrument used for checking or transposing measurements

SQUARING SHEAR – a cutting machine operated by a foot pedal used to cut straight edges on sheet metal

STAKE PLATE – large heavy metal plate with various rectangular holes used for holding metal forming jigs

STAKES – jigs used for hand-forming metal

TEMPERING – reheating of iron base alloys after hardening to some temperature below the critical range followed by desired rate of cooling

TEMPLATE – a gauge, pattern, or mold used as a guide to the form of an item being made

THROATLESS SHEAR – hand operated metal cutting device used to make curved or irregular cuts on sheet stock as well as straight cuts

TIN PLATE – mild steel (low carbon) coated with tin

UPSETTING – the opposite of drawing out; accomplished by holding the metal on the face of an anvil and striking it on the end to reduce length and increase diameter

VISE – any of various tools having two jaws for holding work

WROUGHT IRON – almost pure iron with most of the carbon removed

GLOSSARY
FOR
UPHOLSTERER

ADJACENT COLOR HARMONY – a harmony created by use of colors next to each other on the color wheel

ADVANCING COLORS – those colors which make an object appear larger, as a chair upholstered in red or yellow appears both warmer and larger

AIR GUN – air stapling gun

AIR NUT RUNNER – air operated nut runner (wrench)

AIR SCREWDRIVER – screwdriver operated by air

AIR TACKERS – same as air gun

AIR PRESS – air operated device to help hold different types upholstering objects such as dinette chair seats, or jack knife sofa

ASSEMBLY LINE – line which several persons work, each doing a single job

AWL – a lineup punch

BAYONET NEEDLE – a three-point needle which looks triangular when observed from the point

BENCH CUTTER – a cutter fastened to a bench; used to cut springs, wire edging and bolts

BENDING MACHINE – used to bend ends of arc or no-sag springs

BLACK BOTTOM – cambric used underneath chair or sofas; also called sift cloth and dust sifter

BOBBIN – round device on which is wound the under thread of a sewing machine

BOLT CUTTER – hand tool used to cut springs, wire edging, or bolts

BROCATELLE – a variation of a brocade

BURLAP – coarse, heavy, plain-woven fabric made of jute or hemp; 10 oz. 40" width is usually used

CAMBRIC – thin cotton fabric; black usually used in upholstery; same as black bottom

CENTER OF INTEREST – a convenient focus around which to group furniture

CHIP BOARD – cardboard support usually used over frame and under padding

COLOR – pigment; chroma; hue; shade; tint; tinge; applies specifically to the property of things seen as red, yellow, blue, etc., as distinguished from black

COLOR HARMONY – a pleasing color relation

COOL COLORS – quiet, non-irritating colors, generally used in small rooms

COMPLEMENTARY HARMONY – a harmony formed by the use of two colors which are exactly opposite on the color wheel

CUSHION EQUALIZER – a metal device used to equalize or prevent bunching of material in final closure of cushion

CUTTING DIE – cuts a hole in material for installation of a grommet

CUSTOM SHOP – one in which work is performed according to personal order

DAMASK – a woven-in figured fabric originally made in Damascus, Syria, of silk or linen; usually of cotton in upholstery fabric

DENIM – firm, durable, twilled cotton fabric woven with colored warp and white filling thread; used as top covering of the base

DIAGONAL CUTTING PLIERS (side-cutter) – used to pull staples, clip small wire, pull out small nails, or cut off nail heads

DIE – a tool for imparting a desired shape, form, or finish to a material

DOWELL – a round or pin fitting into abutting piece to prevent motion or slippage

EDGE ROLL – roll to pad edges where frame would cut through covering

EK CLIP – a clip used to attach no-sag or arc springs to the edge of a frame

FELT – cloth made of wool and fur often mixed with natural or synthetic fibers through the action of heat, moisture, chemicals, and pressure

FERRULE – pipe-like device used for joining two ends of spring edge wire; also called border tubes

FOYER – entrance hall or vestibule

FRAME – wood body structure of furniture

FRIEZE – a heavy upholstery fabric with nap or pile on one side; loops may be cut to make pattern

GLIDES – sliders used to attach to bottom of furniture for easy sliding; and for protection of rug and floor

GIMP TACKS – tiny, oval-headed tacks used to fasten gimp, and used for stress points

GROMMET – metal fixture put in fabric to prevent tearing (similar to a buttonhole in a garment)

HEATING GUN – small hand blower to apply heat for stretching and shaping upholstery synthetic materials, and plastics

HOG RING PLIERS – used to attach material to wire frames or springs; also to attach springs to webbing

HUE – the name of a color

INSERTING DIE – installs grommet in hole

INTERMEDIATE COLORS – color made by combining one primary color and one secondary color

JUTE – glossy fiber of the linden family, used for sacking, burlap, and twine

KAPOK – silky fiber made from seed pods of silk, cotton, or kapok tree; soft and fluffy

KEY NUTS – nuts used in bottom of leg rails to screw leg tightly in place

LACQUER – durable, natural, or synthetic spirit varnish

MALLETS -- wooden, rawhide, rubber, plastic devices used to pound but not mar

MASTER TEMPLATE – a gauge, pattern, or mold, used as a guide to the form of a piece being made

MATELASSE – similar to brocade except pattern areas are raised

METALINE NAILS – decorative bead tacks used on outside for trim

NAUGAHYDE – trade name for a type of simulated leather

OTTOMAN – an upholstered (overstuffed) footstool

OUTBACK – outside back covering of chair or sofa

PEDESTAL GRINDER – set of power driven emery wheels for sharpening tools

PLEAT – a fold in cloth made by doubling material over on itself

PIPING – trimming stitched in seams or along edges of slipcovers

PRESSER FOOT – pronged metal part of sewing machine which exerts pressure on fabric in the sewing process

PRIMARY COLORS – red, blue, yellow

RECEDING COLORS – those colors which make an object appear cooler and smaller

SCALE – generally considered by architects and decorators as proper choice of size relationships

SECONDARY COLORS – made by combining two primary colors; as red plus blue equals PURPLE: blue plus yellow equals GREEN; yellow plus red equals ORANGE

SHADE – result of mixing color with black

SISAL – hair-like fiber made from the leaves of the West Indian agave; used as a base to prevent stuffing from falling through, and to prevent edges of structure from cutting through the covering

SLIDE PLATE – face plate which covers the bobbin on a sewing machine

SPIRAL GROOVED – narrow channel or depression in coil shape

STRIPPING – removal of padding and fabric from frame in such a way that old padding can be reused, and fabric can be used for a pattern

STRONG COLORS – bright, irritating colors, generally used in large rooms or in small amounts

STUFFING IRON – long metal piece with slight angle used to stuff cotton in hard-to-reach places

TACK SPITTING – a procedure whereby tacks are held in the mouth until ready for use with the magnetized end of a hammer

TACK STRIP – carboard strip for blind tacking; 1/2" generally used

TAPESTRY – heavy reversible textile, characterized by complicated pictorial or floral designs

TINT – result of mixing a color with white

TORTION SPRING – V-shape springs with coil in center; used to reinforce coil springs; generally used on each corner

TWEED – a rough surface fabric; usually very durable

UPHOLSTERY REGULATOR – device to speed stuffing or padding

UPHOLSTERY TACKS – sterilized tacks

VISE – a tool with two jaws for holding work, usually closes by a screw lever or cam

WEBBING – strong, narrow, closely woven tape designed for bearing weight, used especially in upholstery; 3 1/2" to 4" width, 72" rolls

WELT – a doubled edge, strip, insert, or seam for ornament or reinforcement

ZIPPER – a fastener consisting of two rows of teeth on strips of tape, and a sliding piece, that closes an opening

GLOSSARY
FOR
WAITER, WAITRESS, INFORMAL
WAITER, WAITRESS, COUNTER ATTENDANT
FOOD SERVICE WORKER

A la carte – term referring to a menu with a separate price for each item

Au jus – served in its natural juice or gravy

Bacteria – a large group of microscopic plants having round, rod-like, spiral or filamentous single celled or noncellular bodies, often aggregated in colonies; important to man because of their chemical effects

Banquet – an elaborate and often ceremonious meal for numerous people, often honoring a person

Beverage – a liquid for drinking

Buffet – a meal set out on a buffet or table to be eaten without formal service

Cafeteria – a self-service restaurant or lunchroom

Calorie – the measure of energy-producing value of a given amount of food; the amount of heat required at a pressure of one atmosphere to raise one gram of water 1° C.

Canape – a small piece of toast or fried bread spread with savory foods and served as an appetizer

Carbohydrate – refers to sugars, starches, and cellulose most of which are formed by green plants and which are used for energy and growth or stored for future use

Carte du jour – menu of the day

Carving – the act of cutting up and serving meat

Cover – place setting

Creole – prepared with tomatoes, green peppers, and onions

Crepe Suzette – a French pancake rolled and served with a sauce

Croutons – small pieces of toasted bread used as an accompaniment for soup

Demitasse – a small cup of coffee

Diabetic – one afflicted with diabetes

Digestion – the process of making food absorbable by dissolving it and breaking it down into simpler chemical compounds through the action of enzymes secreted into the alimentary canal

Disinfectant – an agent that frees from infection; a chemical that destroys vegetative forms of harmful organisms but not bacterial spores as a rule

Eclair – French chaux paste (an oblong cream puff) filled with a cream filling and iced

Employee – one employed by another usually for wages or salary

Employer – one who employs

Entree – a dish served before the roast or meat course; as commonly used in restaurants includes all main dishes

Fats – animal tissue consisting chiefly of cells filled with greasy or oily matter

Fillet – a boneless loin cut of beef, veal, or pork, or a boneless strip of fish

"French" Service – a type of food service where the food is served in front of the guests from a rolling cart (gueridon)

Grooming – the process of caring for one's clothing and physical well-being

Gueridon – a rolling cart used for food service

Headwaiter – the head of the dining-room staff of a restaurant or hotel

Hors d'oeuvre – savory foods served as appetizers

Hostess – one who receives and seats in a restaurant

Ladle – a deep-bowled long-handled spoon used for dipping up and conveying liquids

Minerals – substance which is neither animal nor vegetable; of or relating to minerals

Nutrition – sum of the processes whereby an individual takes in and utilizes food substances

Parfait – a frozen dessert of whipped cream, eggs cooked with syrup, and flavoring

Pest – a plant or animal detrimental to man

Protein – any of a large class of naturally occurring complex combinations of carbon, hydrogen, oxygen, and nitrogen plus some minerals that are essential constituents of all living cells both animal and vegetable

Public Relations – the art or science of developing reciprocal understanding and goodwill between a person, firm, or institution, and the public

Puree – a thick sieved vegetable, fruit, or soup

Residue – that which remains after a part is taken, separated, removed, or designated

Rider – attachment to a printed menu

Rissole – browned

Rodent – pertaining to any of small gnawing mammals having a single pair of upper incisors with a chisel-shaped edge; example, rat

Runner – in cafeteria work the one responsible for keeping food pans filled at the serving counter

Russian Service – food service characterized by serving of food (prepared and precut in the kitchen) arranged on silver platters by the chef, and served to the guests individually

Sanitation – the promotion of hygiene and prevention of disease by maintenance of sanitary conditions

Shock – a state of profound depression of the vital processes associated with reduced blood volume and pressure and usually caused by severe injuries, hemorrhage, or burns

Side Work – those duties of a food service worker performed in addition to actual food service

Souffle – a light puffed egg mixture served as an entree; or as a dessert when sweetened

Table d'hote – food service wherein a meal is served to all guests at a stated hour and fixed price; a complete meal of several courses offered at a fixed price

Tongs – any of numerous grasping devices consisting commonly of two pieces joined at one end by a pivot or hinged like scissors

Tourniquet – a device, as a bandage twisted tight with a stick, to arrest bleeding

Vitamins – any of various organic substances that are essential in minute quantities for the maintenance of life and health

GLOSSARY
FOR
WELDING

ABRASION – a grinding action caused by rubbing or scraping (friction) by abrasive solids sliding, rolling, and rubbing against a surface; results in wear

ACETONE – an inflammable liquid of distinctive odor and a biting taste; as a solvent agent for acetylene gas it has absorptive capacity of 24 or 25 volumes acetylene per volume of liquid per atmosphere

ACETYLENE – a colorless gas which burns with a brilliant white light and is used for welding metals

ACETYLENE GENERATOR – a generator in which calcium carbide and water are brought in contact with each other; by dropping carbide in an excess of water large quantities of acetylene such as is used in welding trade are produced

ADDED METAL – that metal which is added to the base metal during welding

ADHESION – a condition in a weld resulting from imperfect fusion of the edges to be joined; caused by melting down the top of the V onto metal not yet melted, and also by oxide in the welded seam; a metal bonded, glued, or brazed to another

AGE HARDENING – term applied to the property exhibited by some of the light alloys (aluminum, manganese) of hardening at ordinary temperatures following by rapid cooling

ALLOY – a mixture with metallic properties composed of two or more elements of which at least one is a metal; the added element may be metallic or non-metallic

ALCLAD – an aluminum alloy; aluminum clad to another metal

AMPERAGE – a measurement of current of electricity, measured in amperes

ANGLE – an opening between two intersecting lines or surfaces; measured in degrees

ANNEALING – a heating and cooling operation of a material in the solid state; usually implies a rather slow cooling

ANODE – the positive terminal of an electric circuit; in welding when the current of the welding machine flows through the arc it travels through the positive or anode terminal

ARC – a luminous glow which results from the successful effort of an electric current to jump across an air gap or other gas gap introduced in its circuit; in electric arc welding the arc is struck between a carbon or metal electrode connected to one terminal of an electric generator and the metal to be welded

ARC BLOW – the tendency of the arc to move in various directions; caused by magnetic fields

ARC CUTTING – an arc may be used for cutting of rivets, scrap sections of cars, boilers, or tanks; only thicknesses below 4" and 6" can be economically cut by an arc

ARC GOUGING – the metal to be gouged or cut is melted with an electric arc and blown away with a high-speed jet of compressed air parallel to the electrode

ARC LENGTH – distance through the center of the arc from the end of the electrode to the point where the arc contacts the surface of the work

ARGON – an inert, colorless, odorless, tasteless gas; used as a shielding gas for TIG welding process

B.T.U. – abbreviation for British Thermal Unit; a unit of quantity of heat required to raise temperature of 1 lb. water 1° F.

BACKING PASS – weld which is the basis for the groove weld

BACK PASS – a pass made to deposit a back weld

BACK UP BAR – electrolytic copper generally is considered the most satisfactory material for backing up a weld; assures a smooth, clean underside of the weld with high conductivity for the welding current as well as a lessened magnetic interference on the arc

BACK WELD – a well deposited at the back of a single groove weld after the weld has been made

BACKHAND WELDING – the welding technique where the rod is fed between the completed weld and flame

BACKING RING – ring used for a backing strip in pipe welding

BARE ELECTRODES – electrode used in arc welding that has no coating of flux, slag, or other material except lime; (outmoded; difficult to purchase)

BASE METAL – the metal to be welded or cut; in alloys the term refers to that metal present in the largest amount

BEAD – metal deposited in oxy-acetylene or arc welding

BEAD FORMING – basic, or beginning exercise in welding; proper current and arc length are required to form beads

BEND TEST – after weld has cooled, piece is placed in a vise with weld just above the jaws; hammer on same or opposite side from which the weld was made; degree of bend indicates character of the weld; process currently performed by bending machine

BEVEL – a type of edge preparation; basic principle of sound welding practice

BRASS – an alloy consisting primarily of copper and zinc, usually two parts copper to one part zinc; proportion may vary according to use

BRAZING – an adhesion process used to join both similar and dissimilar metals at temperatures ranging from 800° to 1200° F.; art of joining metals together

BRINELL TEST – test for determining hardness of metallic materials by applying a known load to the surface to be tested through a hardened steel ball of known diameter

BRONZE – made by mixing copper and tin

BUTANE – a colorless gas used in flame cutting

BUTT WELD – a weld in which two plates or surfaces are brought together edge to edge and welded along the seam formed; forms a flat plane

CALCIUM CARBIDE – used in the production of acetylene, since acetylene is made from calcium carbide and water

CARBON – principal hardening agent in steel

CAST IRON – an alloy of iron containing so much carbon that as cast they are not noticeably malleable at any temperature; made into useful shapes by casting processes and machine cutting operations

CHILL RING – backing ring

COOLING EFFECTS – relation between rate of cooling and hardness of steel depending upon the means of heating, reheating and cooling

COLLAR – excess metal of a completed fusion thermit weld

COMBUSTION – process of oxidation or burning

CONCAVE WELD – term applied to a weld when the top layer finished below the plane of the surrounding material; example, butt joint, and fillet weld

CRACKING – fracturing of a weld

CRITICAL TEMPERATURE – the temperature which is usually associated with the following: hardening when quenches; loss of magnetism; absorption of heat; formation of solid solution; pronounced refinement of coarse grain upon cooling

CUTTING TIP – a gas torch tip used especially for cutting

CUTTING TORCH – device used in gas cutting to control the gases used for the preheating and the oxygen for cutting the metal

DESTRUCTIVE TEST – a test used to supply qualitative information such as tensile, bend, nick break, impact, fatigue, specific gravity, hardness, drift and crush test

DEPOSITED METAL – filler metal added by a fusion welding process

DISTORTION – the state of being out of line, or warped, or misshapened

DOUBLE WELDED JOINT – joint welded from both sides

FERROUS – pertains to iron; usually a term applied to metals with high iron content

FILLET METAL – metal which is added during welding process

FLANGE WELDING – welding on a type of edge joint usually used on sheet metal

FLASH – unexpected exposure of the unprotected eye to the rays of the welding arc

FLASHBACK – occurs when the flame disappears from the end of the tip and the gases burn within the torch or beyond the torch in the hose, usually with a shrill, hissing sound; indicates trouble with the equipment or method of using it

FLOWMETER – used to regulate gas in MIG and TIG welding

FLUX – cleaning agent used to cleanse metals for welding, soldering, and brazing; to protect the rod or filler metal

FOREHAND WELDING – technique employed in general utility welding, in which the flame is directed against the base metal ahead of the completed weld; flame is between rod and bead

FREQUENCY – number of cycles or vibrations per minute

FUSION – process of heating to a fluid state so the edges of the pieces will be joined–the base metal and/or filler metal; must join and provide for flowing together of the metals without applying any pressure

FUSION ZONE – area of the weld metal zone bordering on the unmelted base metal

GAUGE – device for measuring; may be used to measure gas pressures

GOGGLES – scientifically colored glasses for weldors to protect eyes from the rays of the welding arc

GRINDER – an electric or pneumatic device used to remove excess materials by the action of abrasive wheels or belts upon the material

GROOVE – the opening between two members to be joined by a groove weld

HELIUM – inert gas; its non-inflammable quality makes it an important gas in the process of heliarc welding of magnesium

I-BEAM – a steel beam made in the form of a capital I

IMPACT TEST – tests in which one or more blows are suddenly applied to a specimen

IMPURITIES – dirt or other foreign matter in a weld

INCLUSION – entrapped particles of slag, dirt, and gas occurring in welds or metal

INTERMITTENT WELD – weld broken by unwelded spaces; does not have continuity

IRON POWDER – powder added to coating of electrode to speed up deposition rate and to help control and make the arc more stable (I.P. = identification for iron powder)

JOINT – point at which separate base metal parts are joined

KERF – cut from which the metal has been removed by the cutting torch in a flame cutting operation

LAP JOINT – a welded joint in which two overlapping parts are connected by means of fillet, plug, slot, spot, or seam welds

MAGNETIC TEST – test for identification of metals, both ferrous and non-ferrous

MANIFOLD – a system set up whereby more than one torch and/or station can be operated from the same group of tanks

MALLEABILITY – property of metals which allows them to be bent or distorted in shape without rupture

MELTING POINT – the point at which a solid changes to a liquid state

METALLURGY – metallurgy is the science which studies and explains methods of extracting metals from their ores and preparing them for use; physical metallurgy includes heat treatment, mechanical testing, and metallography

MIG – term used to describe metal inert gas welding

MONEL – a high nickel-copper alloy with the properties of high strength and resistance to corrosion; cannot be hardened by heat treatment, but only by cold working

NEUTRAL FLAME – an oxy-acetylene flame obtained by burning approximately one-to-one mixture of acetylene and oxygen

NICKEL – a hard, malleable, ductile, and tenacious metal; white in color; slightly magnetic in character; as an alloying agent in steel it increases strength and toughness at low temperatures

NON-FERROUS – metals containing no ferrite, or iron; examples: copper, brass, bronze, aluminum, and lead

OVERLAP – protrusion of weld metal at the toe of a weld beyond the limits of fusion

OXYGEN – non-metallic element found nearly everywhere in nature, either in free state or in combination with other elements

PEENING – the mechanical working of metal by means of hammer blows

PENETRATION – the depth of fusion; the distance from the original surface of the base metal to that point at which fusion ceases

PIERCING – producing a hole in metal by forcing an instrument through it; may refer to making of seamless steel tubing from a solid steel bar

PIG IRON – product of a blast furnace

PIPE – a structural shape

PLATE – term applied to metal which is in sheet form over 1/8" in thickness

POLARITY – the direction of flow of the electric current

POROSITY – presence of gas pockets or inclusions in welding; a common defect

POSITIONER – a mechanical device designed to permit placing a weldment in a position to permit welding in any position

PREHEAT – application of heat before a welding or cutting operation

PROPANE – term commonly applied to many liquefied petroleums; used as a fuel for flame cutting

PUDDLE - pool of molten metal formed during welding

PURGING – process of removing air from a pipe in any form of inert gas welding

REGULATOR – reducing valve

ROOT – zone at bottom of the cross section space provided to contain a fusion weld

ROOT OPENING – separation at the root between parts to be joined in a groove weld

SEARING – a torch cleaning process; also serves to preheat cast iron

SLAG – impurities which form in the molten bath on the line of the weld; should be removed to produce a quality weld

SOLDER – an alloy used in soldering process

SPLATTER – a fine spray of molten metal which is lost during arc welding

STAINLESS STEEL – alloy highly resistant to acids, to oxidation and scaling at high temperatures

STETHOSCOPIC TESTING – testing for defects with device similar to doctor's stethoscope; listen to vibrations when metal is struck

TACKING – short welds made at points on the welding line for the purpose of holding pieces in place until actual welding operation is really underway

TEMPERING – reheating of iron base alloys after hardening to some temperature below the critical range followed by desired rate of cooling

TENSILE STRENGTH – resistance to breaking offered by metals when subjected to a pulling stress

TIG – tungsten inert gas arc welding

TORCH – tool or instrument used for welding or cutting; burns a combination of high temperature gases

TRANSFORMER – device used to change alternating current from one voltage to another

TUNGSTEN – very hard steel-gray metal used in pure state and in alloys

VALVE – device by which the flow of liquid, air, or other gases may be stopped, started, or regulated; consists of a movable part which opens or obstructs the passageway

VOLT – a unit of electrical pressure

WELD – a localized consolidation of metal by a welding process

WELDING – process by which two pieces of metal are joined by heating them to a melting temperature and causing them to flow together

WELDMENT – work or metal together by fusion welding

GLOSSARY
FOR
MILLMAN (WOODWORKING) (ENTRY)
WOODWORKING MACHINE OPERATOR

ABRASIVE – a gritty substance used for wearing, grinding, or rubbing away by friction; gritty coating on paper or cloth used for cutting or smoothing ig

ANNUAL RINGS – concentric rings which show in a cross section of a log

BASEBOARD – a finish term applying to the board at the base of a wall

BEADING – a projecting bank, rim, or molding strung together like beads; a repeating pattern on a strip of wood

BEAM – a horizontal timber which supports or bears a load (joist)

BEVEL – an angle cut from one corner of a board to any point on an adjacent side of the board; the angle one surface makes with another when they are not at right angles

BLADE – part of the file on which the teeth are formed

BLEEDING – seepage of color through a finish

BRACKET – a three-cornered brace used as a support usually for a shelf

BURL – a hard, woody, often flattened hemispherical outgrowth on a tree and from which face veneer is sliced

CALIPER – a measuring instrument with two legs or jaws that can be adjusted to determine inside or outside thickness, diameter, or distance between surfaces

CHAMFER – an angle cut along a straight line removing any corner of the board, but not extending to another corner

CHECK – lengthwise separation of the wood, as a small crack or split

CHECKING – a small pattern of cracks caused by uneven surface drying

CHUCK – jawed device for holding drill bit

CLEAR – term used to mean that the wood is free of knots, stains, blemishes, and other unsound features

CROTCH – an angle formed by the intersection of two branches; a fork; face veneer is sliced from

COUNTER BORE – the enlargement of the top of a round hole to receive the head of a fillister head screw

COUNTERSINK – a conical rose bit or fluted reamer for enlarging bolt holes to a conical recess to receive the tapered head of a flat head screw so its top will be even with the surface or top of the work

DADO – a groove cut across the grain of the wood to make a joint used when the crosspiece must support considerable weight; has two sides and a bottom

DIMENSION LUMBER OR SQUARES – any cut other than standard lumber cut; yard lumber which is 2" to 5" thick

DOVETAIL – a flaring tenon and a mortise into which it fits tightly making an interlocking joint between two pieces

DOWEL – a pin fitting into a hole in an abutting piece to prevent motion or slippage; a round rod used to cut up into dowels

DRESS – to trim a line

FILE CARD – brushlike device used to clean a wood file

FLITCH – thick piece of log or lumber from which veneer may be cut; may refer to a stack of veneer

FLUTING – one of the vertical parallel grooves as on a classical architectural column

GAIN – a notch or mortise in a part of a wood joint

GAUGE – an instrument used for measuring, testing, and/or indicating quantity (size and dimension)

GRAIN – appearance of surface of wood due to stratification of fibers

GRIT – very fine gravel, sand, or abrasive

GROOVE – a long narrow channel or depression running with the grain; has two sides and a bottom

HARDWOODS – wood which comes from deciduous or broad-leaved trees (botanical)

JIG – a device used to guide a tool or hold parts together in a certain position

JOINT – to make two edges or surfaces fit very close together

JOIST – small timbers or beams set in parallel from wall to wall to support the floor

KERF – the width of cut made by a saw

KNOT – the hard mass formed in a tree where a branch grows out; shows as a round dark piece in a board

LATHE – machine in which work is held and rotated while being shaped by a tool

MILLWORK – lumber manufactured to specific shapes so they may be assembled into doors, frames, window moldings, flooring, etc.

MITER – a surface forming the beveled end or edge of a piece where a joint is made by cutting two pieces at an angle

MORTISE – usually a square or rectangular hole into or through which some other part fits or passes, usually to receive a tenon to make a mortise and tenon joint

OPACITY – a quality in a pigment to cover a surface

PLYWOOD – constructed by gluing three or more veneer strips and core pieces into sheets which have the grain of the wood running crosswise in alternate layers. This type of construction gives greater strength and resistance with a minimum of weight. Plywood is always made up of odd number of plys.

QUARTER-SAWING – lumber produced by cutting at right angles to the annual rings

RABBET – a cut having a bottom and one side and removing one corner either with or against the grain

RASP – a coarse file with cutting points instead of lines; a steel instrument with its surface covered with sharp edged furrows and teeth used for abrading other substances, as wood

RELIEF CUT – term generally used in band sawing; removal of excess material to allow the blade to make sharper cuts than could be permitted otherwise

RELISH – shoulder cut to form the haunch of the tenon

RESAWING – cutting a manufactured board by decreasing thickness but maintaining width

RIPPING – process of sawing wood with the grain

ROTARY – turning as a wheel does on its axle

ROUGH – term used to apply to unplaned lumber

ROUGH LUMBER – lumber as it comes from the saw

ROUND – a layer of lumber in a stack

ROUTING – a process of cutting by a circular cutting bit operated at high speed

SCRIBE – cut off to make level

SELECT – high quality or grade of wood

SILL – the heavy timber which helps support the frame of a house

SKEW (chisel) – flat turning chisel used to smooth cylinders, round edges, and for limited use in making V-cuts

SLAB – piece which is cut across the annual rings, runs full length of the log, and has only one flat surface

SOFTWOODS – wood which comes from coniferous or needle-bearing trees

SOUND – healthy, not weak; applies to lumber free from injury, decay, or defect

SPLINE – thin piece of wood fitted into certain assembled joints

SPOKESHAVE – frame with two handles which holds a small cutting blade used to plane convex and concave edges

STRUCTURAL LUMBER – similar to yard lumber but is over 5" in thickness and in width. Grading is based on strength of the whole piece

STUMPWOOD – stump from which face veneer is sliced

SURFACED LUMBER – has at least one smooth side after it comes from the planer

TANG – tapered end on which the file handle is attached; also top of any bit or tool used with a brace

TAPER – to make or become gradually smaller toward one end

TEMPLATES – gauge, pattern, or mold used as a guide to the form of a piece being made

TEMPLET – same as template

TENON – small block end of a board which fits into the mortise formed by one or more rabbet cuts made against the grain

TOENAILING – process of driving two nails diagonally to cross each other well below the board surface; used to reinforce or strengthen the joining of two boards

TONGUE AND GROOVE – a joint made by fitting a rib on one edge of a board into a groove of another board to make a flush joint (example: hardwood flooring)

VENEER – a very thin sheet of wood sawed, peeled, or sliced from a log

WARP – to curve in width

WIND – a twist in a board

YARD LUMBER – lumber less than 5" in thickness and graded by thickness, width, length, and condition

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